

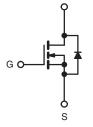


| D Series | Power | MOSFET |
|-----------------|-------|--------|
|-----------------|-------|--------|

| PRODUCT SUMMARY | | | | | |
|--------------------------------------------|----------------------------|--|--|--|--|
| V _{DS} (V) at T _J max. | 450 | | | | |
| R _{DS(on)} max. at 25 °C (Ω) | V _{GS} = 10 V 0.6 | | | | |
| Q _g max. (nC) | 30 | | | | |
| Q _{gs} (nC) | 4 | | | | |
| Q _{gd} (nC) | 7 | | | | |
| Configuration | Single | | | | |

TO-220AB





N-Channel MOSFET

D

FEATURES

- Optimal Design
 - Low Area Specific On-Resistance
 - Low Input Capacitance (C_{iss})
 - Reduced Capacitive Switching Losses
 - High Body Diode Ruggedness
 - Avalanche Energy Rated (UIS)
- Optimal Efficiency and Operation
 - Low Cost
 - Simple Gate Drive Circuitry
 - Low Figure-of-Merit (FOM): Ron x Qg
 - Fast Switching
- Material categorization: For definitions of compliance please see <u>www.vishay.com/doc?99912</u>

Note

Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

APPLICATIONS

- Consumer Electronics
 - Displays (LCD or Plasma TV)
- Server and Telecom Power Supplies
- SMPS Industrial
 - Welding

 - Induction Heating
 - Motor Drives
- Battery Chargers

| ORDERING INFORMATION | |
|----------------------|------------|
| Package | TO-220AB |
| Lead (Pb)-free | IRF740BPbF |

| ABSOLUTE MAXIMUM RATINGS (T _C | = 25 °C, unless otherwis | se noted) | | | |
|------------------------------------------------------|-----------------------------------------|-----------------------------------|------------------|-------|--|
| PARAMETER | | SYMBOL | LIMIT | UNIT | |
| Drain-Source Voltage | | V _{DS} | 400 | | |
| Gate-Source Voltage | | | ± 30 | V | |
| Gate-Source Voltage AC (f > 1 Hz) | V _{GS} | 30 | | | |
| Continuous Preis Current (T 150 °C) | V_{GS} at 10 V $T_C = 25 °C$ | | 10 | А | |
| Continuous Drain Current ($T_J = 150 \ ^{\circ}C$) | V_{GS} at 10 V $T_C = 100 \text{ °C}$ | ID | 6 | | |
| Pulsed Drain Current ^a | I _{DM} | 23 | | | |
| Linear Derating Factor | | 1.2 | W/°C | | |
| Single Pulse Avalanche Energy ^b | | E _{AS} | 194 | mJ | |
| Maximum Power Dissipation | PD | 147 | W | | |
| Operating Junction and Storage Temperature Range | | T _J , T _{stg} | - 55 to + 150 | °C | |
| Drain-Source Voltage Slope | T _J = 125 °C | | 24 | V/ns | |
| Reverse Diode dV/dt ^d | | dV/dt | 0.6 | v/IIS | |
| Soldering Recommendations (Peak Temperature) | for 10 s | | 300 ^c | °C | |

Notes

a. Repetitive rating; pulse width limited by maximum junction temperature.

b. V_{DD} = 50 V, starting T_J = 25 °C, L = 2.3 mH, R_g = 25 Ω , I_{AS} = 13 A.

c. 1.6 mm from case.

d. $I_{SD} \leq I_D,$ starting T_J = 25 °C.

S12-1375-Rev. A, 18-Jun-12

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Document Number: 91519





| Static Vois | THERMAL RESISTANCE RATI | NGS | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|---------------------|-------------------------------------------------------------------------------|-------------------------------------|----------------------------|--------|------|-------|------|
| Maximum Junction-to-Case (Drain) Rinx - 0.85 "CW SPECIFICATIONS (T _J = 25 °C, unless otherwise noted) PARAMETER SYMBOL TEST CONDITIONS Min. TYP. MAX. UN Static Drain-Source Breakdown Voltage V_{OS} $V_{OS} = 0$ V, $I_D = 250 \mu$ A 400 - - V Gate-Source Threshold Voltage (N) $V_{OS} = 0$ V, $I_D = 250 \mu$ A 3 - 5 V Gate-Source Threshold Voltage (N) $V_{OS} = 0$ V, $V_{OS} = 0$ V - + 100 n/ Zero Gate Voltage Drain Current I_{OS} $V_{OS} = 300$ V, $V_{OS} = 0$ V - - 10 µ/ Drain-Source On-State Resistance $P_{OS}(m)$ $V_{OS} = 300$ V, $V_{OS} = 0$ V, $V_{OS} = 10 \times V_{OS} = 10 \times V_{OS} = 100$ V, $I_D = 5$ A - 0.5 0.6 0. Duput Capacitance C_{OSS} $V_{OS} = 0$ V, $V_{OS} = 0$ V to 320 V - 66 | PARAMETER | SYMBOL | TYP. | | MAX. | | UNIT | | |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$ | Maximum Junction-to-Ambient | R _{thJA} | - 62 | | 20.04 | | | | |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$ | Maximum Junction-to-Case (Drain) | R _{thJC} | - 0.85 | | | - °C/W | | | |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$ | | | | | | | | | |
| Static VGS = 0 V, ID = 250 µA 400 - - V Drain-Source Breakdown Voltage V_{DS} Reference to 25 °C, ID = 250 µA - 0.53 - V/V Gate-Source Ineshold Voltage (N) VGS(h) VDS = VGS, ID = 250 µA 3 - 5 V Gate-Source Leakage IGSS VGS = 30 V - - ±100 fn/ Zero Gate Voltage Drain Current IDSS VGS = 400 V, VGS = 0 V - - 10 µ/ Drain-Source On-State Resistance Ros(n) VGS = 50 V, ID = 5 A - 0.5 0.6 0.6 Forward Transconductance Gas VDS = 50 V, ID = 5 A - 2.7 - S Output Capacitance Case VDS = 0 V, VDS = 0 V, ID = 5 A - 2.7 - S Input Capacitance Cases VGS = 0 V, VDS = 0 V, ID = 5 A - 2.7 - S Input Capacitance Cases VGS = 0 V, VDS = 0 V, ID = 0 A, VGS = 10 V - 15 | | | 1 | | | | I | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | PARAMETER | SYMBOL | TES | T CONDIT | IONS | MIN. | TYP. | MAX. | UNIT |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Static | | | | | | | | |
| Gate-Source Threshold Voltage (N) V _{GS(th)} V _{DS} = V _{GS} , I _D = 250 µÅ 3 - 5 V Gate-Source Leakage I _{GSS} V _{GS} = ± 30 V - - ± 100 n/ Zero Gate Voltage Drain Current I _{DSS} V _{DS} = 400 V, V _{GS} = 0 V - - 1 µ/ Drain-Source On-State Resistance R _{DS(on)} V _{DS} = 320 V, V _{GS} = 0 V, T _J = 125 °C - 10 µ/ Input Capacitance G _{16s} V _{DS} = 50 V, I _D = 5 Å - 2.7 - S Output Capacitance C _{clis} V _{DS} = 100 V, I _D = 5 Å - 2.7 - S Reverse Transfer Capacitance C _{clis} V _{DS} = 100 V, - 59 - - 9 - - 15 30 - 166 - 9 - 15 30 - 15 30 - 15 30 - 16 36 - 15 30 - 16 16 - 16 - | Drain-Source Breakdown Voltage | V _{DS} | V _{GS} = | = 0 V, I _D = | 250 µA | 400 | | - | V |
| | V _{DS} Temperature Coefficient | $\Delta V_{DS}/T_J$ | Reference | to 25 °C, | l _D = 250 μA | - | 0.53 | - | V/°C |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Gate-Source Threshold Voltage (N) | V _{GS(th)} | V _{DS} = | = V_{GS} , I_D = | 250 µA | 3 | - | 5 | V |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$ | Gate-Source Leakage | I _{GSS} | | $V_{GS} = \pm 30$ | V | - | - | ± 100 | nA |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | Zava Cata Valtaga Drain Current | | $V_{DS} = 400 \text{ V}, \text{ V}_{GS} = 0 \text{ V}$ | | - | - | 1 | _ | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Zero Gale voltage Drain Current | IDSS | V _{DS} = 320 V | /, V _{GS} = 0 ^v | √, T _J = 125 °C | - | - | 10 | μA |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Drain-Source On-State Resistance | R _{DS(on)} | $V_{GS} = 10 V$ | | I _D = 5 A | - | 0.5 | 0.6 | Ω |
| DynamicInput Capacitance C_{18s} $V_{GS} = 0 V$, $V_{DS} = 100 V$, $f = 1 MHz$ $ 526$ $-$ Output Capacitance C_{08s} $V_{OS} = 100 V$, $f = 1 MHz$ $ 59$ $-$ Effective output capacitance, energy related ⁰ $C_{0(tr)}$ $V_{GS} = 0 V$, $V_{DS} = 0 V to 320 V$ $ 666$ $-$ Effective output capacitance, time related ⁰ $C_{0(tr)}$ $V_{GS} = 0 V$, $V_{DS} = 0 V to 320 V$ $ 666$ $-$ Total Gate Charge Q_g Q_{gs} $V_{GS} = 10 V$ $I_D = 5 A, V_{DS} = 320 V$ $ 4$ $-$ Gate-Drain Charge Q_{gd} Q_{gd} $V_{GS} = 10 V$ $I_D = 5 A, V_{DS} = 320 V$ $ 115$ 30 Turn-On Delay Time $t_{d(cn)}$ t_r $V_{OD} = 400 V, I_D = 10 A,$ $V_{GS} = 10 V, R_g = 9.1 \Omega$ $ 118$ 36 Fail Time t_r $V_{DD} = 400 V, I_D = 10 A,$ $V_{GS} = 10 V, R_g = 9.1 \Omega$ $ 114$ 28 Gate Input Resistance R_g $f = 1 MHz$, open drain $ 1.8$ 36 Pulsed Diode Characteristics $ 10 M_{CSFET} symbol$ showing the integral reverse $p - n junction diode$ $ 10 M_{CS}$ Dide Forward Voltage V_{SD} $T_J = 25 °C, I_S = 5 A, V_{GS} = 0 V$ $ 1.2 V$ Reverse Recovery Time t_{rr} T_{rr} $ 230 - ms$ Reverse Recovery Charge Q_{rr} $T_J = 25 °C, I_S = 5 A, V_{GS} = 0 V$ $ I_{rr$ | Forward Transconductance | 9 _{fs} | V _{DS} | s = 50 V, I _D | = 5 A | - | 2.7 | - | S |
| Output CapacitanceCoss $V_{OS} = 100 \text{ V},$ f = 1 MHz $ 59$ $-$ Reverse Transfer Capacitance C_{rss} $V_{OS} = 100 \text{ V},$ f = 1 MHz $ 59$ $-$ Effective output capacitance, energy related ⁰ $C_{o(er)}$ $V_{OS} = 0 \text{ V},$ $V_{DS} = 0 \text{ V} to 320 \text{ V}$ $ 666$ $-$ Effective output capacitance, time related ⁰ $C_{o(tr)}$ $V_{OS} = 0 \text{ V},$ $V_{DS} = 0 \text{ V} to 320 \text{ V}$ $ 666$ $-$ Total Gate Charge Q_g Q_g $V_{GS} = 10 \text{ V}$ $I_D = 5 \text{ A}, V_{DS} = 320 \text{ V}$ $ 44$ $-$ Gate-Drain Charge Q_{gd} $V_{GS} = 10 \text{ V}$ $I_D = 5 \text{ A}, V_{DS} = 320 \text{ V}$ $ 44$ $ nd$ Gate-Drain Charge Q_{gd} $V_{GS} = 10 \text{ V}$ $I_D = 5 \text{ A}, V_{DS} = 320 \text{ V}$ $ 18$ 36 $-$ Turn-On Delay Time $t_d(on)$ $V_{GS} = 10 \text{ V}, \text{ Rg} = 9.1 \Omega$ $ 18$ 36 $ 144$ 28 Gate Input Resistance R_g $f = 1 \text{ MHz}, open drain 1.8 \OmegaDrain-Source Body Diode CharacteristicsMOSFET symbolshowing theintegral reversep - n junction diode 10-Pulsed Diode Forward CurrentI_{SM}MOSFET symbolshowing theintegral reversep - n junction diode 10-Dide Forward VoltageV_{SD}T_J = 25 ^{\circ} C, I_F = I_S = 5 A,dI/dt = 100 A/\mu S, V_R = 25 \text{ V} -$ | Dynamic | | | | | • | • | | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Input Capacitance | C _{iss} | | $V_{ee} = 0$ | 1 | - | 526 | - | |
| Reverse Transfer Capacitance C_{rss} $f = 1 \text{ MHz}$ $ 9$ $-$ Effective output capacitance, energy related ⁰ $C_{o(er)}$ $V_{GS} = 0 \text{ V},$ $V_{DS} = 0 \text{ V to } 320 \text{ V}$ $ 666$ $-$ Effective output capacitance, time related ⁰ $C_{o(tr)}$ $V_{GS} = 0 \text{ V},$ $V_{DS} = 0 \text{ V to } 320 \text{ V}$ $ 666$ $-$ Total Gate Charge Q_g $Gate-Source ChargeQ_{gg}Q_{gd}V_{GS} = 10 \text{ V}I_D = 5 \text{ A}, V_{DS} = 320 \text{ V} 44-Gate-Drain ChargeQ_{gd}V_{GS} = 10 \text{ V}I_D = 5 \text{ A}, V_{DS} = 320 \text{ V} 44 ndTurn-On Delay Timet_{d(on)}T_rV_{GS} = 10 \text{ V}, I_D = 10 \text{ A},V_{GS} = 10 \text{ V}, R_g = 9.1 \Omega 1836-Turn-Off Delay Timet_{d(off)}r_fr_f 1428-Gate Input ResistanceR_gf = 1 \text{ MHz}, open drain 1.8 \OmegaPulsed Diode Forward CurrentI_SMOSFET symbolshowing theintegral reversep - n junction diode 10-Dide Forward VoltageV_{SD}T_J = 25 ^{\circ}C, I_S = 5 A, V_{GS} = 0 \text{ V} 1.2VReverse Recovery ChargeQ_{rr}T_J = 25 ^{\circ}C, I_F = I_S = 5A,dI/ct = 100 A/µS, V_R = 25 \text{ V} 1.6 1.6$ | Output Capacitance | | $V_{DS} = 100 V,$ | | - | 59 | - | - | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Reverse Transfer Capacitance | | | | - | 9 | - | | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Effective output capacitance, energy | C _{o(er)} | | | - | 66 | - | pF | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | | C _{o(tr)} | | | - | 84 | - | 1 | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Total Gate Charge | Qq | | | | - | 15 | 30 | |
| Gate-Drain Charge Q_{gd} -7-Turn-On Delay Time $t_{d(on)}$ Rise Time t_r Turn-Off Delay Time t_r Turn-Off Delay Time $t_{d(off)}$ Fall Time t_f Gate Input Resistance R_g Gate Input Resistance R_g Tarin-Source Body Diode CharacteristicsContinuous Source-Drain Diode Current I_S Pulsed Diode Forward Current I_S Diode Forward Voltage V_{SD} Turn-Off Delay Time t_r I_S $T_J = 25 ^\circ C$, $I_F = I_S = 5 A$, $dI/dt = 100 A/\mus, V_R = 25 V$ I_S $I_S = 0$ I_S $I_S = 5 A, V_{GS} = 0 V$ I_S $I_S = 25 ^\circ C, I_F = I_S = 5 A,$ I_S $I_S = 0$ I_S $I_S = 0$ I_S $I_S = 0$ I_S $I_S = 0$ I_S $I_S = 0 V_S I_S = 5 A, V_G = 0 V$ I_S $I_S = 0 C, I_F = I_S = 5 A, V_G = 0 V$ I_S $I_S = 0 C, I_F = 1 S = 5 A, V_S = 25 V$ I_S $I_S = 0 C, I_F = 0 S = 5 A, V_S = 25 V$ I_S $I_S = 0 C, I_S = 5 A, V_S = 25 V$ I_S $I_S = 0 C, I_S = 5 A, V_S = 25 V$ I_S $I_S = 0 C, I_S = 5 A, V_S = 25 V$ I_S $I_S = 0 C, I_S = 5 A, V_S = 25 V$ I_S $I_S = 0 C, I_S = 5 A, V_S = 25 V$ I_S $I_S = 0 C,$ | Gate-Source Charge | | $V_{GS} = 10 V$ $I_D = 5 A, V_{DS} = 320 V$ | | - | 4 | - | nC | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Gate-Drain Charge | • | | | | - | 7 | - | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | Turn-On Delay Time | | | | - | 12 | 24 | | |
| Turn-Off Delay Time $t_{d(off)}$ $V_{DD} = 400 \text{ V}, \text{ Ip} = 10 \text{ A}, \text{ V}_{GS} = 10 \text{ V}, \text{ R}_{g} = 9.1 \Omega$ -1836Fall Time t_{f} r_{f} -1428Gate Input Resistance R_{g} $f = 1 \text{ MHz}$, open drain-1.8- Ω Drain-Source Body Diode CharacteristicsMOSFET symbol showing the integral reverse $p - n$ junction diode-10APulsed Diode Forward Current I_{SM} $MOSFET symbol$ showing the integral reverse $p - n$ junction diode10ADiode Forward Voltage V_{SD} $T_J = 25 \text{ °C}, I_S = 5 \text{ A}, V_{GS} = 0 \text{ V}$ 1.2VReverse Recovery Time t_{rr} Reverse Recovery Charge Q_{rr} $T_J = 25 \text{ °C}, I_F = I_S = 5 \text{ A}, V_{GS} = 25 \text{ V}$ -1.6- μ_{C} | Rise Time | | N . | 400 \/ 1 | - 10 4 | - | 18 | 36 | |
| Fall Timetf-1428Gate Input ResistanceRgf = 1 MHz, open drain-1.8- Ω Drain-Source Body Diode CharacteristicsContinuous Source-Drain Diode CurrentIsMOSFET symbol showing the integral reverse p - n junction diode-10-10Pulsed Diode Forward CurrentIsMOSFET symbol showing the integral reverse p - n junction diode10-Diode Forward VoltageV_SDTJ = 25 °C, IS = 5 A, V_GS = 0 V1.2VReverse Recovery TimetrrTJ = 25 °C, IF = IS = 5 A, dl/dt = 100 A/µS, VB = 25 V-1.6-µO | Turn-Off Delay Time | | | | - | 18 | 36 | ns | |
| Gate Input Resistance R_g $f = 1 \text{ MHz}$, open drain-1.8- Ω Drain-Source Body Diode CharacteristicsContinuous Source-Drain Diode Current I_S MOSFET symbol showing the integral reverse $p - n$ junction diode10APulsed Diode Forward Current I_{SM} I_{SD} $T_J = 25 \ ^{\circ}C$, $I_S = 5 \text{ A}$, $V_{GS} = 0 \text{ V}$ 40ADiode Forward Voltage V_{SD} $T_J = 25 \ ^{\circ}C$, $I_S = 5 \text{ A}$, $V_{GS} = 0 \text{ V}$ 1.2VReverse Recovery Time t_{rr} $T_J = 25 \ ^{\circ}C$, $I_F = I_S = 5 \text{ A}$, dl/dt = 100 A/µs, $V_R = 25 \text{ V}$ -1.6- μ | Fall Time | - (-) | | | - | 14 | 28 | | |
| Drain-Source Body Diode CharacteristicsContinuous Source-Drain Diode CurrentIsMOSFET symbol showing the integral reverse $p - n$ junction diode10APulsed Diode Forward CurrentIsMIsMTJ = 25 °C, IS = 5 A, VGS = 0 V40Diode Forward VoltageVSDTJ = 25 °C, IS = 5 A, VGS = 0 V1.2VReverse Recovery TimetrrTJ = 25 °C, IF = IS = 5 A, dl/dt = 100 A/µS, VB = 25 V1.6-µC | Gate Input Resistance | | f = 1 MHz. open drain | | - | 1.8 | - | Ω | |
| Continuous Source-Drain Diode CurrentIsMOSFET symbol showing the integral reverse p - n junction diode-10APulsed Diode Forward CurrentIsmIsm $r_{J} = 25 \ ^{\circ}C$, Is = 5 A, VGS = 0 V40ADiode Forward VoltageVspT_J = 25 \ ^{\circ}C, Is = 5 A, VGS = 0 V1.2VReverse Recovery TimetrrT_J = 25 \ ^{\circ}C, Is = 5 A, dl/dt = 100 A/µs, VB = 25 V1.6-µc | • | ÷ | | | | | | | |
| Pulsed Diode Forward CurrentIsmIntegra reverse p - n junction diode40Diode Forward Voltage V_{SD} $T_J = 25 \ ^{\circ}C$, $I_S = 5 A$, $V_{GS} = 0 V$ 1.2VReverse Recovery Time t_{rr} $T_J = 25 \ ^{\circ}C$, $I_F = I_S = 5 A$, dl/dt = 100 A/µs, $V_B = 25 V$ 1.6- μc | • | | showing the integral reverse | | - | - | 10 | | |
| Reverse Recovery Time t_{rr} $T_J = 25 \degree C, I_F = I_S = 5 \ A,$ -230-nsReverse Recovery Charge Q_{rr} Induction Control Con | Pulsed Diode Forward Current | I _{SM} | | | - | - | 40 | A | |
| Reverse Recovery Time t_{rr} $T_J = 25 \degree C, I_F = I_S = 5 \ A,$ -230-nsReverse Recovery Charge Q_{rr} Induction Control Con | Diode Forward Voltage | V _{SD} | $T_{1} = 25 \text{ °C}, I_{S} = 5 \text{ A}, V_{GS} = 0 \text{ V}$ | | - | - | 1.2 | V | |
| Reverse Recovery Charge Q_{rr} $T_J = 25 \ ^{\circ}C$, $I_F = I_S = 5 \ ^{\circ}A$, $dI/dt = 100 \ ^{\circ}A/\mu s$, $V_R = 25 \ ^{\circ}V$ $ 1.6 \ ^{\circ}-\mu C$ | · · · · · · · · · · · · · · · · · · · | | | | | - | 230 | - | ns |
| di/dt = 100 A/µs, v _R = 25 v | | | T _J = 25 °C, $I_F = I_S = 5 A$, dI/dt = 100 A/µs, $V_R = 25 V$ | | - | | - | μC | |
| | , , | | | | - | | - | A | |

Notes

a. $C_{oss(er)}$ is a fixed capacitance that gives the same energy as C_{oss} while V_{DS} is rising from 0 % to 80 % V_{DS} .

b. $C_{oss(tr)}$ is a fixed capacitance that gives the same charging time as C_{oss} while V_{DS} is rising from 0 % to 80 % V_{DS} .

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TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

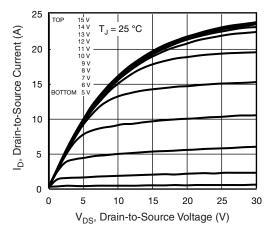


Fig. 1 - Typical Output Characteristics

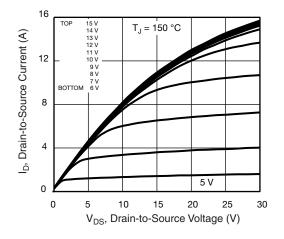


Fig. 2 - Typical Output Characteristics

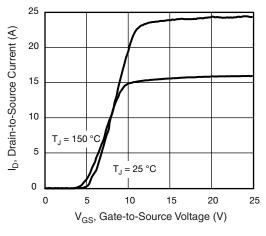


Fig. 3 - Typical Transfer Characteristics

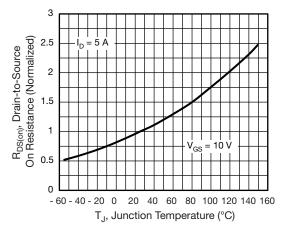


Fig. 4 - Normalized On-Resistance vs. Temperature

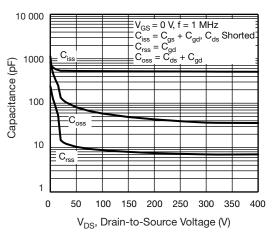


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

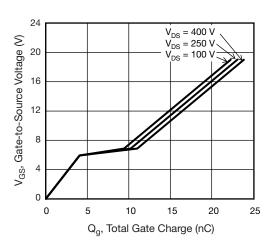


Fig. 6 - Typical Gate Charge vs. Gate-to-Source Voltage

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IRF740B

Vishay Siliconix

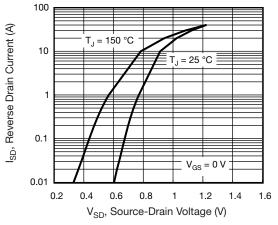
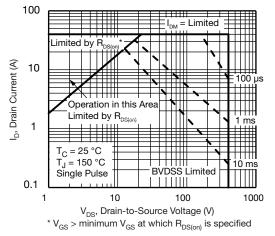
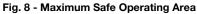


Fig. 7 - Typical Source-Drain Diode Forward Voltage





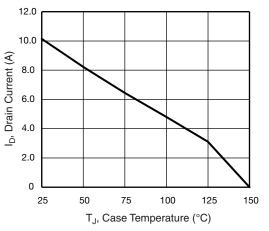


Fig. 9 - Maximum Drain Current vs. Case Temperature

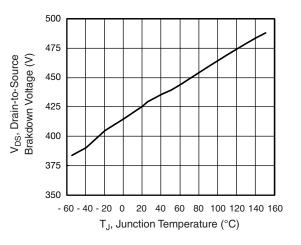
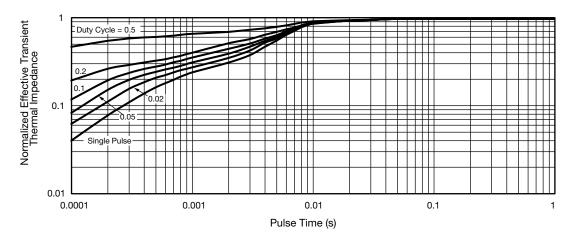


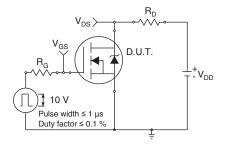
Fig. 10 - Temperature vs. Drain-to-Source Voltage





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Fig. 12 - Switching Time Test Circuit



Fig. 13 - Switching Time Waveforms

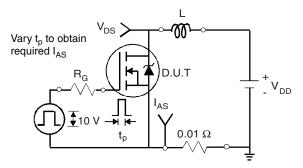


Fig. 14 - Unclamped Inductive Test Circuit

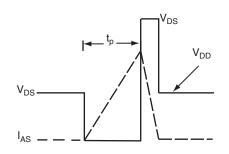


Fig. 15 - Unclamped Inductive Waveforms

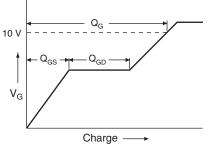


Fig. 16 - Basic Gate Charge Waveform

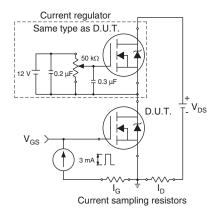


Fig. 17 - Gate Charge Test Circuit

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Peak Diode Recovery dV/dt Test Circuit

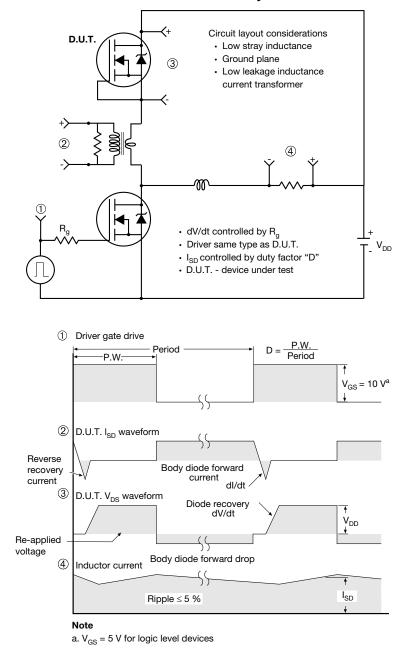


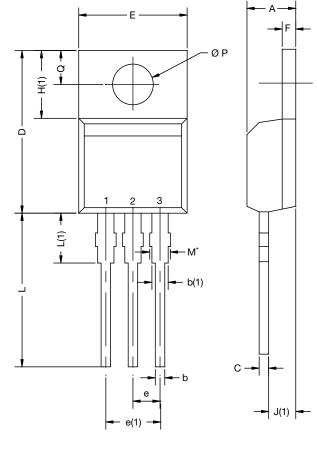
Fig. 18 - For N-Channel

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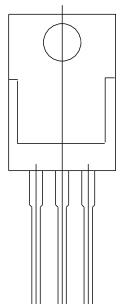


| | MILLIMETERS | | INCHES | | |
|------------------------------------|-------------------|-----------|--------|-------|--|
| DIM. | MIN. | MAX. | MIN. | MAX. | |
| А | 4.14 | 4.70 | 0.163 | 0.185 | |
| b | 0.69 | 1.02 | 0.027 | 0.040 | |
| b(1) | 1.14 | 1.73 | 0.045 | 0.068 | |
| С | 0.36 | 0.61 | 0.014 | 0.024 | |
| D | 14.33 | 15.85 | 0.564 | 0.624 | |
| Е | 9.96 | 10.52 | 0.392 | 0.414 | |
| е | 2.41 | 2.67 | 0.095 | 0.105 | |
| e(1) | 4.88 | 5.28 | 0.192 | 0.208 | |
| F | 0.43 | 1.40 | 0.017 | 0.055 | |
| H(1) | 6.10 | 6.48 | 0.240 | 0.255 | |
| J(1) | 2.41 | 2.92 | 0.095 | 0.115 | |
| L | 13.36 | 14.40 | 0.526 | 0.567 | |
| L(1) | 3.33 | 4.04 | 0.131 | 0.159 | |
| ØΡ | 3.53 | 3.94 | 0.139 | 0.155 | |
| Q | 2.59 | 3.00 | 0.102 | 0.118 | |
| ECN: X15- DWG: 603 ⁻ | 0003-Rev. A, I | 19-Jan-15 | | | |

Notes

- M^{\star} = 0.052 inches to 0.064 inches (dimension including protrusion), heatsink hole for HVM

- Outline conforms to $\mathsf{JEDEC}^{\circledast}$ outline TO-220AB with exception of dimension F



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