

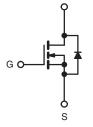


<b>D</b> Series	Power	MOSFET
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PRODUCT SUMMARY				
V <sub>DS</sub> (V) at T <sub>J</sub> max.	450			
R <sub>DS(on)</sub> max. at 25 °C (Ω)	V <sub>GS</sub> = 10 V 0.6			
Q <sub>g</sub> max. (nC)	30			
Q <sub>gs</sub> (nC)	4			
Q <sub>gd</sub> (nC)	7			
Configuration	Single			

## TO-220AB





N-Channel MOSFET

D

## FEATURES

- Optimal Design
  - Low Area Specific On-Resistance
  - Low Input Capacitance (C<sub>iss</sub>)
  - 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

<b>ABSOLUTE MAXIMUM RATINGS (T</b> <sub>C</sub>	= 25 °C, unless otherwis	se noted)			
PARAMETER	SYMBOL	LIMIT	UNIT		
Drain-Source Voltage	V <sub>DS</sub>	400			
Gate-Source Voltage	V <sub>GS</sub>	± 30	V		
Gate-Source Voltage AC (f > 1 Hz)		30			
Continuous Drain Current (T <sub>J</sub> = 150 °C)	$V_{GS}$ at 10 V $T_C = 25 °C$	- I <sub>D</sub>	10		
	$V_{GS}$ at 10 V $T_C = 100 \text{ °C}$		6	A	
Pulsed Drain Current <sup>a</sup>	I <sub>DM</sub>	23			
Linear Derating Factor		1.2	W/°C		
Single Pulse Avalanche Energy <sup>b</sup>	E <sub>AS</sub>	194	mJ		
Maximum Power Dissipation	PD	147	W		
Operating Junction and Storage Temperature Rang	T <sub>J</sub> , T <sub>stg</sub>	- 55 to + 150	°C		
Drain-Source Voltage Slope	T <sub>J</sub> = 125 °C	a\\//a+	24	V/ns	
Reverse Diode dV/dt <sup>d</sup>		dV/dt	0.6	v/115	
Soldering Recommendations (Peak Temperature)	for 10 s		300 <sup>c</sup>	°C	

#### Notes

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

b.  $V_{DD}$  = 50 V, starting T<sub>J</sub> = 25 °C, L = 2.3 mH, R<sub>g</sub> = 25  $\Omega$ , I<sub>AS</sub> = 13 A.

c. 1.6 mm from case.

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

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Static         Void State	THERMAL RESISTANCE RATI	NGS							
Maximum Junction-to-Case (Drain)         Rhuc         -         0.85         "CW           SPECIFICATIONS (T <sub>J</sub> = 25 °C, unless otherwise noted)           PARAMETER         SYMBOL         TEST CONDITIONS         Min.         TYP.         MAX.         UN           Static         Drain-Source Breakdown Voltage $V_{OS}$ $V_{GS} = 0$ V, $I_D = 250 \mu A$ 400         -         -         V           Gate-Source Threshold Voltage (N) $V_{OS} = V_{OS}$ $V_{OS} = 0 V$ , $I_D = 250 \mu A$ 3         -         5         V           Gate-Source Threshold Voltage (N) $V_{OS} = V_{OS}$ $V_{OS} = 0 V$ -         +         100         n/           Zero Gate Voltage Drain Current $I_{OS}$ $V_{OS} = 320$ V, $V_{OS} = 0$ V, $V_{OS} = 0$ -         -         10         µ/           Drain-Source On-State Resistance $P_{OS(m)}$ $V_{OS} = 100$ V, $V_{OS} = 100$ V, $I_D = 5$ A         -         0.5         0.6         0.           Output Capacitance $C_{Oms}$ $V_{OS} = 0$ V, $V_{OS} = 0$ V to 320 V         -         84	PARAMETER	SYMBOL	TYP.		MAX.		UNIT		
Maximum Junction-to-Case (Drain) $R_{hulc}$ -         0.85           SPECIFICATIONS (T <sub>J</sub> = 25 °C, unless otherwise noted)         TEST CONDITIONS         Min.         TYP.         MAX.         UN           Static         Test conditions         Min.         TYP.         MAX.         UN           Static         Test conditions         Min.         TYP.         MAX.         UN           Static         Static         Static         Static         Static         Static           Case Source Encender Coefficient $\Delta V_{0S} Temperature Coefficient         \Delta V_{0S} Temper$	Maximum Junction-to-Ambient	R <sub>thJA</sub>	- 62						
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Maximum Junction-to-Case (Drain)	R <sub>thJC</sub>	- 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 Threshold Voltage (N) $V_{OS}(h)$ $V_{DS} = V_{GS}, ID = 250 µA         3         -         5         V/V           Gate-Source Leakage         IGSS         V_{OS} = 30 V         -         -         \pm 100 h/V           Zero Gate Voltage Drain Current         IDSS         V_{OS} = 320 V, V_{OS} = 0 V         -         -         10         \mu/V           Drain-Source On-State Resistance         R_{DS(n)} V_{OS} = 50 V, I_D = 5 A         -         2.7         -         S           Dynamic         Input Capacitance         C_{oss} V_{OS} = 0 V, V_{OS} = 0 V, V_{OS} = 0 V, V_{OS} = 0 V, I_D = 5 A         -         2.7         -         S           Output Capacitance         C_{oss} V_{OS} = 0 V, V_{OS} = 0 V, V_{OS} = 0 V, V_{OS} = 0 V, I_D = 5 A         -         2.7         -         S           Effective output capacitance, energy         C_{o(er)} V_{OS} = 0 V, V_{OS} = 0 V, V_{OS} = 0 V, V_{OS} = 0 V, I_D = 5 A, V_{DS} = 320 V         -         44         -         -         7         -$			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 SS(th)         V DS = VGS, ID = 250 $\mu$ A         3         -         5         V           Gate-Source Leakage         I GSS         V DS = 400 V, VGS = 0 V         -         -         1 $\mu$ Zero Gate Voltage Drain Current         I DSS         V DS = 400 V, VGS = 0 V         -         -         10 $\mu$ Drain-Source On-State Resistance         R DS(on)         V DS = 320 V, VGS = 0 V, T_U = 125 °C         -         10 $\mu$ Drain-Source On-State Resistance         R DS(on)         V DS = 50 V, VGS = 0 V, T_U = 125 °C         -         10 $\mu$ Input Capacitance         Creas         V DS = 50 V, ID = 5 A         -         2.7         -         S           Output Capacitance         C Gas         V DS = 100 V, T_U = 125 °C         -         -         59         -           Reverse Transfer Capacitance         C Gas         V DS = 100 V, T_S = 100 V, T_S = 100 V, T_S = 0 V to 320 V         -         84         -           Total Gate Charge         Q Gg         Q Gas         V C S = 10 V, T_S = 320 V         -         84         -           Gate-Drain Charge         Q Gg         Q Gas         -         118         36         -         12 <td>Drain-Source Breakdown Voltage</td> <td>V<sub>DS</sub></td> <td>V<sub>GS</sub> =</td> <td>= 0 V, I<sub>D</sub> =</td> <td>250 µA</td> <td>400</td> <td></td> <td>-</td> <td>V</td>	Drain-Source Breakdown Voltage	V <sub>DS</sub>	V <sub>GS</sub> =	= 0 V, I <sub>D</sub> =	250 µA	400		-	V
	V <sub>DS</sub> Temperature Coefficient	$\Delta V_{DS}/T_{J}$	Reference	to 25 °C,	l <sub>D</sub> = 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 <sub>GS(th)</sub>	V <sub>DS</sub> =	= $V_{GS}$ , $I_D$ =	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 <sub>GSS</sub>		$V_{GS} = \pm 30$	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 <sub>DS</sub> = 400 V, V <sub>GS</sub> = 0 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	DSS	V <sub>DS</sub> = 320 V	/, V <sub>GS</sub> = 0 <sup>v</sup>	√, T <sub>J</sub> = 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 <sub>DS(on)</sub>	$V_{GS} = 10 V$		I <sub>D</sub> = 5 A	-	0.5	0.6	Ω
DynamicInput Capacitance $C_{liss}$ $V_{GS} = 0 V$ , $V_{DS} = 100 V$ , $f = 1 MHz$ $ 526$ $-$ Output Capacitance $C_{oss}$ $V_{OS} = 100 V$ , $f = 1 MHz$ $ 59$ $-$ Effective output capacitance, energy related <sup>a</sup> $C_{o(tr)}$ $V_{GS} = 0 V$ , $V_{DS} = 0 V to 320 V$ $ 666$ $-$ Effective output capacitance, time related <sup>a</sup> $C_{o(tr)}$ $V_{GS} = 0 V$ , $V_{DS} = 0 V to 320 V$ $ 666$ $-$ Total Gate Charge $Q_g$ $Q_{gs}$ $V_{GS} = 10 V$ $I_D = 5 A, V_{DS} = 320 V$ $ 4$ $-$ Gate-Drain Charge $Q_{gd}$ $Q_{gd}$ $V_{GS} = 10 V$ $I_D = 5 A, V_{DS} = 320 V$ $ 4$ $-$ Turn-On Delay Time $t_{d(on)}$ $t_r$ $V_{DD} = 400 V, I_D = 10 A, V_{GS} = 10 V, R_g = 9.1 \Omega$ $ 118$ $36$ Fail Time $t_r$ $V_{DD} = 400 V, I_D = 10 A, V_{GS} = 10 V, R_g = 9.1 \Omega$ $ 14$ $28$ Gate Input Resistance $R_g$ $f = 1 MHz$ , open drain $ 1.8$ $ \Omega$ Pulsed Diode Forward Current $I_S$ MOSFET symbol showing the integral reverse $p - n$ junction diode $  10$ $A$ Dide Forward Voltage $V_{SD}$ $T_J = 25 °C, I_S = 5 A, V_{GS} = 0 V$ $  1.2$ $V$ Reverse Recovery Time $t_{rr}$ $T_{rr}$ $T_{J} = 25 °C, I_S = 5 A, V_{GS} = 0 V$ $  1.2$ $V$ Reverse Recovery Charge $Q_{rr}$ $T_{rr}$	Forward Transconductance	9 <sub>fs</sub>	V <sub>DS</sub>	s = 50 V, I <sub>D</sub>	= 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 <sup>0</sup> $C_{o(er)}$ $V_{OS} = 0 \text{ V},$ $V_{DS} = 0 \text{ V} to 320 \text{ V}$ $ 666$ $-$ Effective output capacitance, time related <sup>0</sup> $C_{o(tr)}$ $V_{OS} = 0 \text{ V},$ $V_{DS} = 0 \text{ V} to 320 \text{ V}$ $ 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 $t_{d(on)}$ $T_r$ $ 10 \text{ A},$ $V_{GS} = 10 \text{ V}, R_g = 9.1 \Omega$ $ 144$ $28$ Gate Input Resistance $R_g$ $f = 1 \text{ MHz}, open drain$ $ 1.8$ $ \Omega$ Drain-Source Body Diode Characteristics $MOSFET$ symbol showing the integral reverse $p - n$ junction diode $  10$ $-$ Pulsed Diode Forward Current $I_S$ $MOSFET$ symbol showing the integral reverse $p - n$ junction diode $  10$ $-$ Dide Forward Voltage $V_{SD}$ $T_J = 25 \text{ °C}, I_F = I_S = 5 \text{ A},$ $d/dt = 100 A/\mu S, V_R = 25 \text{ V}$ $-$ <	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 <sub>iss</sub>	V <sub>DS</sub> = 100 V,		-	526	-	pF	
Reverse Transfer Capacitance $C_{rss}$ $f = 1 \text{ MHz}$ $ 9$ $-$ Effective output capacitance, energy related <sup>a</sup> $C_{o(er)}$ $V_{GS} = 0 \text{ V},$ $V_{DS} = 0 \text{ V to } 320 \text{ V}$ $ 666$ $-$ Effective output capacitance, time related <sup>b</sup> $C_{o(tr)}$ $V_{GS} = 0 \text{ V},$ $V_{DS} = 0 \text{ V to } 320 \text{ V}$ $ 666$ $-$ Total Gate Charge $Q_{g}$ $Gate-Drain ChargeQ_{gg}Q_{gd}V_{GS} = 10 \text{ V}I_D = 5 \text{ A}, V_{DS} = 320 \text{ V} 44-Gate-Drain ChargeQ_{gd}Gate-Drain ChargeQ_{gd}V_{GS} = 10 \text{ V}I_D = 5 \text{ A}, V_{DS} = 320 \text{ V} 1424Turn-On Delay Timet_{d(ori)}V_{GS} = 10 \text{ V}, \text{ I}_D = 10 \text{ A},V_{GS} = 10 \text{ V}, \text{ R}_g = 9.1 \Omega 1836Fall Timet_rT_rT_r 1428Gate Input ResistanceR_gf = 1 \text{ MHz}, open drain 1.8-Drain-Source Body Diode CharacteristicsNOSFET symbolshowing theintegral reversep - n junction diode  10-Pulsed Diode Forward CurrentI_{SM}MOSFET symbolshowing theintegral reversep - n junction diode  1.0-Dide Forward VoltageV_{SD}T_J = 25 ^{\circ}C, I_S = 5 A, V_{GS} = 0 \text{ V}  1.2VReverse Recovery Timet_{rr}T_J = 25 ^{\circ}C, I_S = 25 \text{ A},dI/ct = 100 A/Ju, V_R = 25 \text{ V}-$	Output Capacitance				-	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 <sub>o(er)</sub>			-	66	-		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		C <sub>o(tr)</sub>			-	84	-		
$ \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	nC
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 $t_r$ $r_f$ $T_J = 25  ^\circ C$ , $I_F = I_S = 5 A$ , $dI/dt = 100 A/\mus, V_R = 25 V$ $r_J = 25  ^\circ C$ $r_F = I_S = 5 A$ , $r_F = 15 = 5 A$ , $r_J = 25  ^\circ C$ $r_F = I_S = 5 A$ , $r_F = 15 = 5 A$ , $r_J = 25  ^\circ C$ $r_F = I_S = 5 A$ , $r_F = 15 = 5 A$ , $r_J = 25  ^\circ C$ $r_F = I_S = 5 A$ , $r_F = 15 = 5 A$ , $r_J = 25  ^\circ C$ $r_F = I_S = 5 A$ , $r_F = 15 = 5 A$ , $r_J = 25  ^\circ C$ $r_F = I_S = 5 A$ , $r_F = 15 = 5 A$ , $r_J = 25  ^\circ C$ $r_F = I_S = 5 A$ , $r_F = 15 = 5 A$ ,	Gate-Source Charge		V <sub>GS</sub> = 10 V	I <sub>D</sub> = 5	A, V <sub>DS</sub> = 320 V	-	4	-	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Gate-Drain Charge	9				-	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 $t_{d(off)}$ $V_{DD} = 400 \text{ V}, \text{ ID} = 10 \text{ A}, \text{ V}_{GS} = 10 \text{ V}, \text{ R}_{g} = 9.1 \Omega$ -1836Fall Time $t_{f}$ $r_{f}$ -1428Gate Input Resistance $R_{g}$ $f = 1 \text{ MHz}, \text{ open drain}$ -1.8- $\Omega$ Drain-Source Body Diode CharacteristicsContinuous Source-Drain Diode Current $I_{S}$ MOSFET symbol showing the integral reverse $p - n$ junction diode-10APulsed Diode Forward Current $I_{SM}$ $T_{J} = 25 \text{ °C}, I_{S} = 5 \text{ A}, V_{GS} = 0 \text{ V}$ 1.2VReverse Recovery Time $t_{rr}$ $T_{J} = 25 \text{ °C}, I_{F} = I_{S} = 5 \text{ A}, dI/dt = 100 \text{ A/µs}, V_{R} = 25 \text{ V}$ -1.6- $\mu$	Rise Time		N .	400 \/ 1	- 10 4	-	18	36	1
Fall Timetf-1428Gate Input ResistanceRgf = 1 MHz, open drain-1.8- $\Omega$ 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_SDT_J = 25 °C, I_S = 5 A, V_{GS} = 0 V1.2VReverse Recovery TimetrrT_J = 25 °C, I_F = I_S = 5 A, dl/dt = 100 A/µs, V_B = 25 V-1.6- $\mu$	Turn-Off Delay Time					-	18	36	ns
Gate Input Resistance $R_g$ $f = 1 \text{ MHz}$ , open drain-1.8- $\Omega$ 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- $\mu$	Fall Time				-	14	28	1	
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, VR = 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 $r_{J} = 25 °C$ , Is = 5 A, VGS = 0 V40ADiode Forward VoltageVsDTJ = 25 °C, Is = 5 A, VGS = 0 V1.2VReverse Recovery TimetrrTJ = 25 °C, Is = 5 A, dl/dt = 100 A/µs, VB = 25 V1.6-µc	•	, ÷							
Pulsed Diode Forward CurrentIsmIntegral 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, $V_R = 25 \ V$ 1.6-µc	•		showing the integral reverse		-	-	10	A	
Reverse Recovery Time $t_{rr}$ $T_J = 25 \degree C, I_F = I_S = 5 \ A,$ -230-nsReverse Recovery Charge $Q_{rr}$ $dl/dt = 100 \ A/\mu s, V_B = 25 \ V$ -1.6- $\mu C$	Pulsed Diode Forward Current	I <sub>SM</sub>			-	-	40		
Reverse Recovery Time $t_{rr}$ $T_J = 25 \degree C, I_F = I_S = 5 \ A,$ -230-nsReverse Recovery Charge $Q_{rr}$ $dl/dt = 100 \ A/\mu s, V_B = 25 \ V$ -1.6- $\mu C$	Diode Forward Voltage	V <sub>SD</sub>	$T_{1} = 25 \text{ °C}, I_{S} = 5 \text{ A}, V_{GS} = 0 \text{ V}$		-	-	1.2	V	
Reverse Recovery Charge $Q_{rr}$ $T_J = 25 \ ^{\circ}C$ , $I_F = I_S = 5 \ A$ , $dI/dt = 100 \ A/\mu s$ , $V_R = 25 \ V$ -1.6- $\mu C$	· · · · · · · · · · · · · · · · · · ·		T <sub>J</sub> = 25 °C, I <sub>F</sub> = I <sub>S</sub> = 5 A,		-	230	-	ns	
dl/dt = 100 A/µs, v <sub>R</sub> = 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)

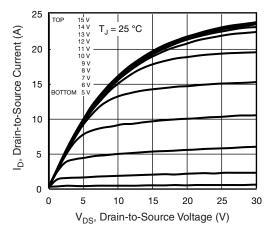


Fig. 1 - Typical Output Characteristics

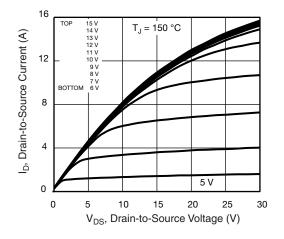


Fig. 2 - Typical Output Characteristics

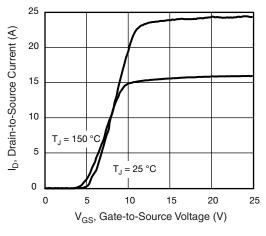


Fig. 3 - Typical Transfer Characteristics

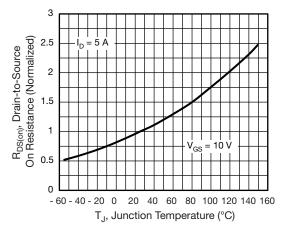


Fig. 4 - Normalized On-Resistance vs. Temperature

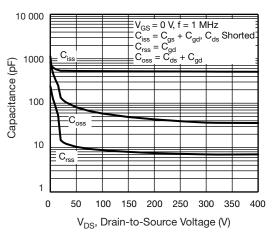


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

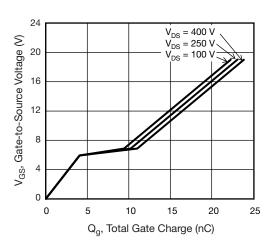


Fig. 6 - Typical Gate Charge vs. Gate-to-Source Voltage

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**IRF740B** 

Vishay Siliconix

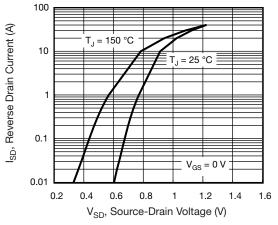
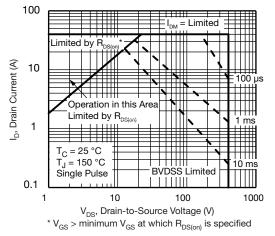
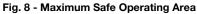


Fig. 7 - Typical Source-Drain Diode Forward Voltage





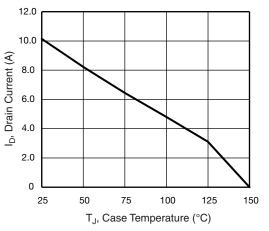


Fig. 9 - Maximum Drain Current vs. Case Temperature

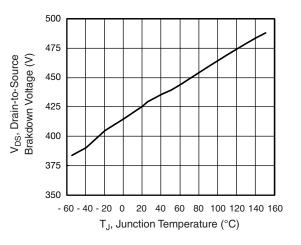
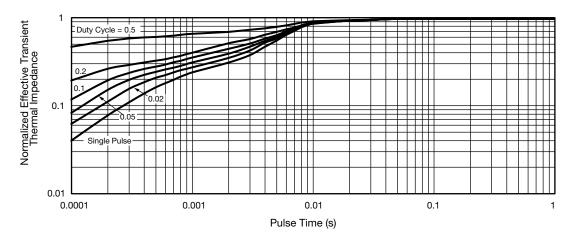


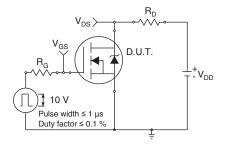
Fig. 10 - Temperature vs. Drain-to-Source Voltage





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Fig. 12 - Switching Time Test Circuit



Fig. 13 - Switching Time Waveforms

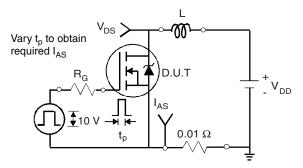


Fig. 14 - Unclamped Inductive Test Circuit

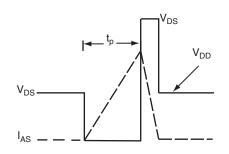


Fig. 15 - Unclamped Inductive Waveforms

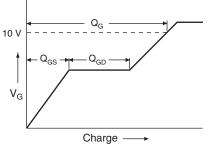


Fig. 16 - Basic Gate Charge Waveform

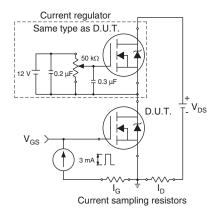


Fig. 17 - Gate Charge Test Circuit

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### Peak Diode Recovery dV/dt Test Circuit

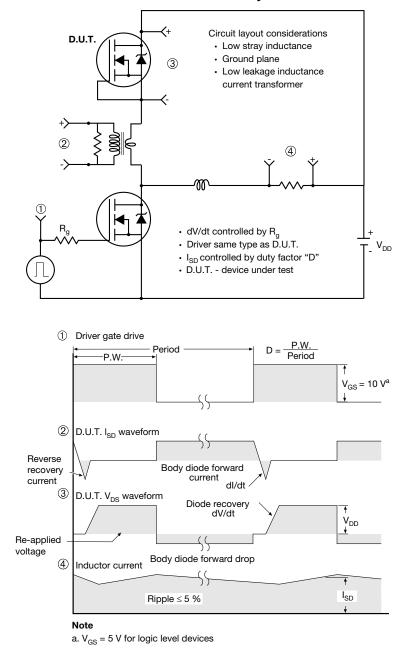


Fig. 18 - For N-Channel

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