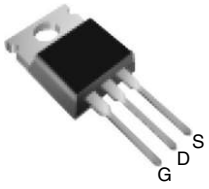
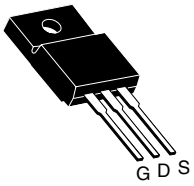
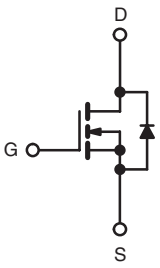
Power MOSFET

PRODUCT SUMMARY		
V_{DS} (V) at T_J max.	560	
$R_{DS(on)}$ (Ω)	V_{GS} = 10 V	0.225
Q_g (Max.) (nC)	76	
Q_{gs} (nC)	21	
Q_{gd} (nC)	29	
Configuration	Single	

TO-220 TO-220 FULLPAK







N-Channel MOSFET

FEATURES

- Low Figure-of-Merit R_{on} x Q_g
- 100 % Avalanche Tested
- High Peak Current Capability
- dV/dt Ruggedness
- Improved t_{rr}/Q_{rr}
- Improved Gate Charge
- High Power Dissipations Capability
- Compliant to RoHS Directive 2002/95/EC

Available
RoHS* COMPLIANT

ORDERING INFORMATION		
Package	TO-220	TO-220 FULLPAK
Lead (Pb)-free	SiHP18N50C-E3	SiHF18N50C-E3

ABSOLUTE MAXIMUM RATINGS T_C = 25 °C, unless otherwise noted

PARAMETER			SYMBOL	LIMIT	UNIT
Drain-Source Voltage			V_{DS}	500	V
Gate-Source Voltage			V_{GS}	± 30	
Continuous Drain Current (T_J = 150 °C)[a]	V_{GS} at 10 V	T_C = 25 °C	I_D	18	A
		T_C = 100 °C		11	
Pulsed Drain Current[b]			I_{DM}	72	
Linear Derating Factor		TO-220		1.8	W/°C
		FULLPAK		0.3	
Single Pulse Avalanche Energy[c]			E_{AS}	361	mJ
Maximum Power Dissipation		TO-220	P_D	223	W
		FULLPAK		38	
Peak Diode Recovery dV/dt[d]			dV/dt	5	V/ns
Operating Junction and Storage Temperature Range			T_J, T_{stg}	- 55 to + 150	°C
Soldering Recommendations (Peak Temperature)[d]	for 10 s			300	

Notes

a. Drain current limited by maximum junction temperature.
b. Repetitive rating; pulse width limited by maximum junction temperature.
c. V_{DD} = 50 V, starting T_J = 25 °C, L = 2.5 mH, R_g = 25 Ω, I_{AS} = 17 A.
d. $I_{SD} \leq$ 18 A, dI/dt ≤ 380 A/µs, $V_{DD} \leq V_{DS}$, $T_J \leq$ 150 °C.
e. 1.6 mm from case.

* Pb containing terminations are not RoHS compliant, exemptions may apply

THERMAL RESISTANCE RATINGS

PARAMETER		SYMBOL	TYP.	MAX.	UNIT
Maximum Junction-to-Ambient	TO-220	R_{thJA}	-	62	°C/W
	FULLPAK		-	65	
Maximum Junction-to-Case (Drain)	TO-220	R_{thJC}	-	0.56	
	FULLPAK		-	3.29	

SPECIFICATIONS T_J = 25 °C, unless otherwise noted

PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Static							
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA		500	-	-	V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	Reference to 25 °C, I_D = 1 mA		-	0.6	-	V/°C
Gate-Source Threshold Voltage (N)	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA		3.0	-	5.0	V
Gate-Source Leakage	I_{GSS}	V_{GS} = ± 30 V		-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 500 V, V_{GS} = 0 V		-	-	25	µA
		V_{DS} = 400 V, V_{GS} = 0 V, T_J = 125 °C		-	-	250	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10 V	I_D = 10 A	-	0.225	0.270	Ω
Forward Transconductance[a]	g_{fs}	V_{DS} = 50 V, I_D = 10 A		-	6.4	-	S
Dynamic							
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1.0 MHz		-	2451	2942	pF
Output Capacitance	C_{oss}			-	300	360	
Reverse Transfer Capacitance	C_{rss}			-	26	32	
Internal Gate Resistance	R_g	f = 1.0 MHz, open drain		-	1.1	-	Ω
Total Gate Charge	Q_g	V_{GS} = 10 V	I_D = 18 A, V_{DS} = 400 V	-	65	76	nC
Gate-Source Charge	Q_{gs}			-	21	-	
Gate-Drain Charge	Q_{gd}			-	29	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 250 V, I_D = 18 A, R_g = 7.5 Ω, V_{GS} = 10 V		-	80	-	ns
Rise Time	t_r			-	27	-	
Turn-Off Delay Time	$t_{d(off)}$			-	32	-	
Fall Time	t_f			-	44	-	
Drain-Source Body Diode Characteristics							
Continuous Source-Drain Diode Current	I_S	MOSFET symbol showing the integral reverse p - n junction diode 		-	-	18	A
Pulsed Diode Forward Current	I_{SM}			-	-	72	
Body Diode Voltage	V_{SD}	T_J = 25 °C, I_S = 18 A, V_{GS} = 0 V		-	-	1.5	V
Body Diode Reverse Recovery Time	t_{rr}	T_J = 25 °C, I_F = I_S, dI/dt = 100 A/µs, V_R = 35 V		-	503	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}			-	6.7	-	µC
Reverse Recovery Current	I_{RRM}			-	30	-	A

Note

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

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

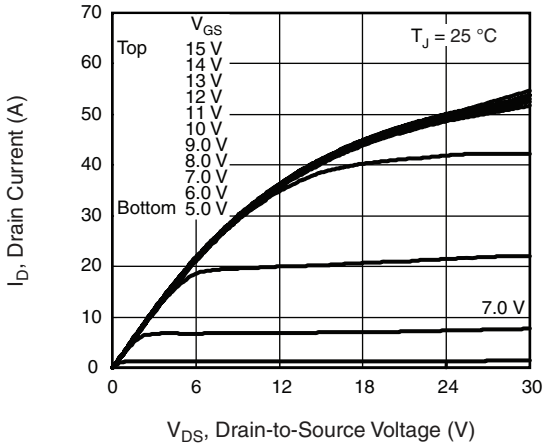


Fig. 1 - Typical Output Characteristics, T_C = 150 °C (TO-220)

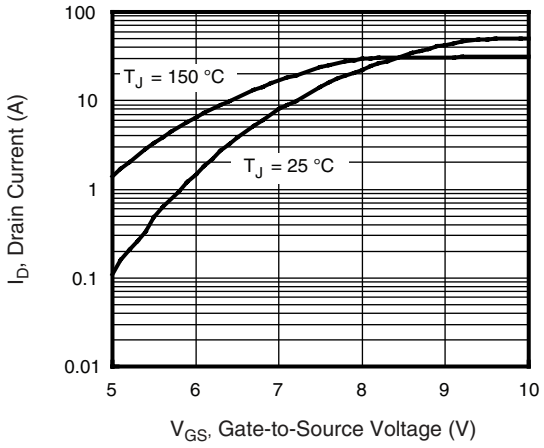


Fig. 3 - Typical Transfer Characteristics

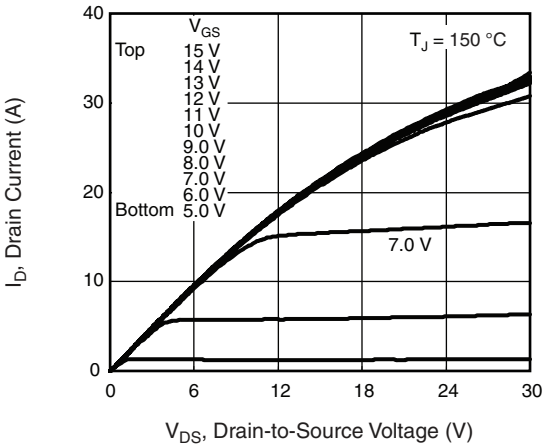


Fig. 2 - Typical Output Characteristics, T_C = 150 °C (TO-220)

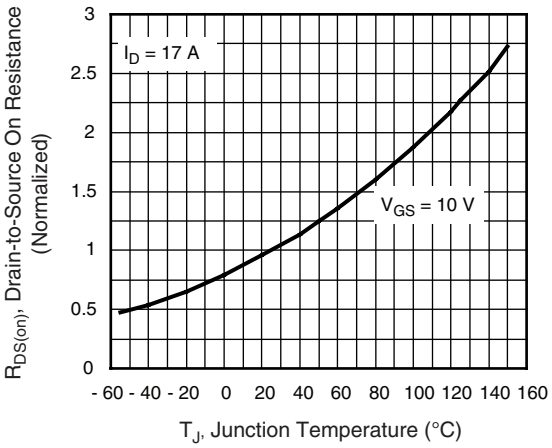


Fig. 4 - Normalized On-Resistance vs. Temperature

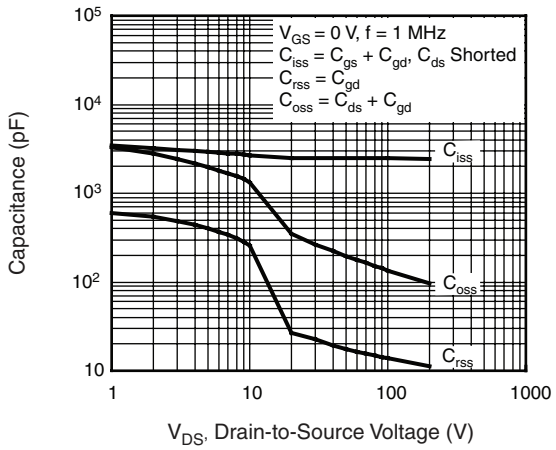


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

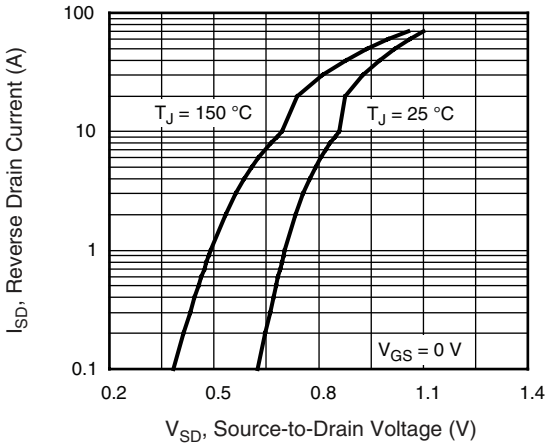


Fig. 7 - Typical Source-Drain Diode Forward Voltage

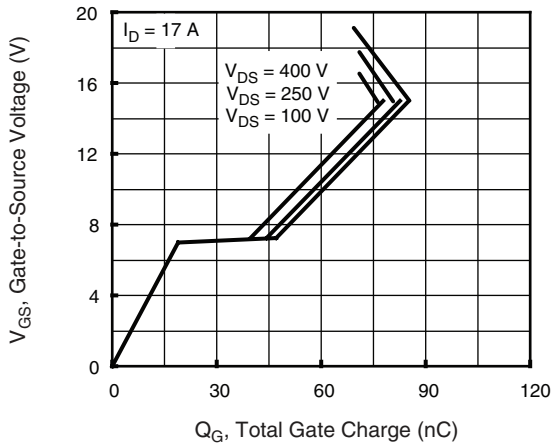


Fig. 6 - Typical Gate Charge vs. Gate-to-Source Voltage

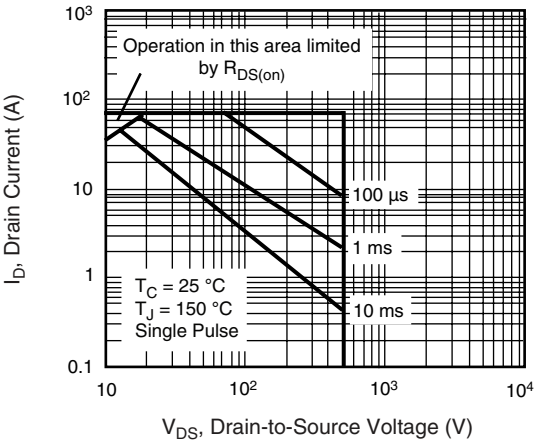


Fig. 8 - Maximum Safe Operating Area

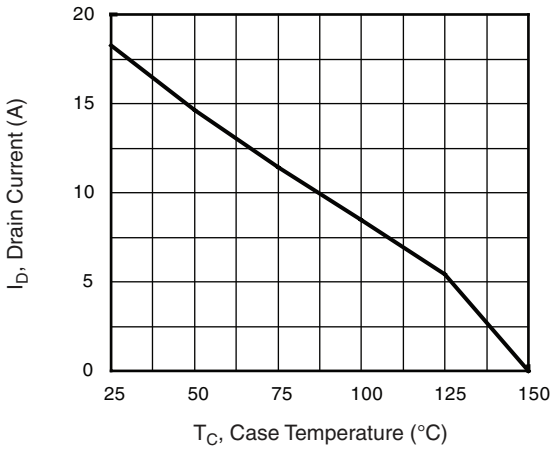


Fig. 9 - Maximum Drain Current vs. Case Temperature (TO-220)

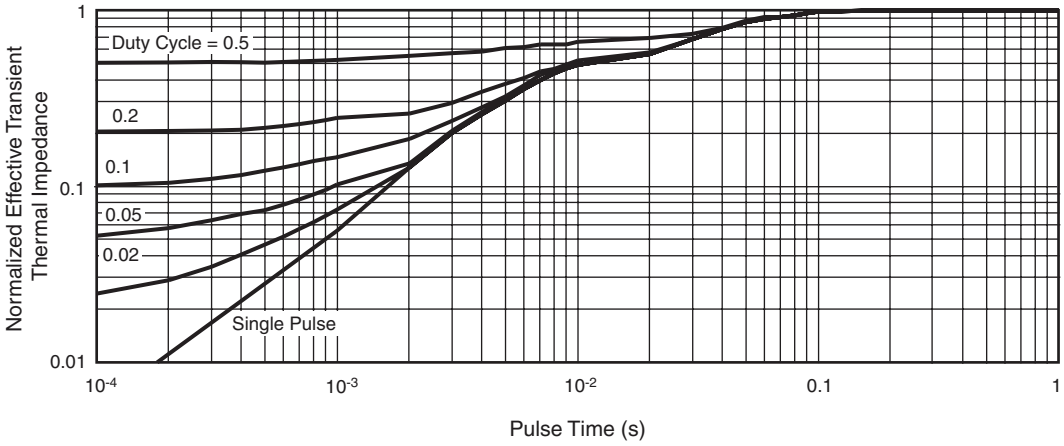


Fig. 10 - Normalized Thermal Transient Impedance, Junction-to-Case (TO-220)

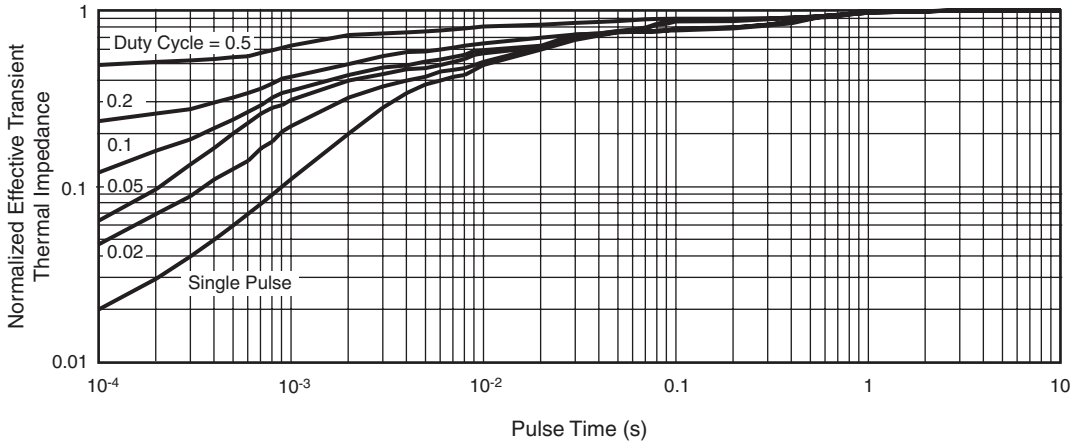


Fig. 11 - Normalized Thermal Transient Impedance, Junction-to-Case (TO-220FP)

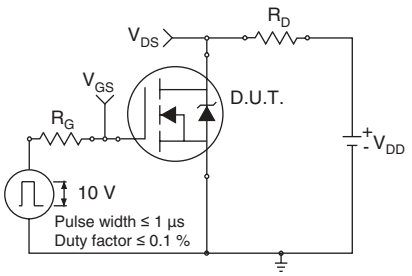


Fig. 12a - Switching Time Test Circuit

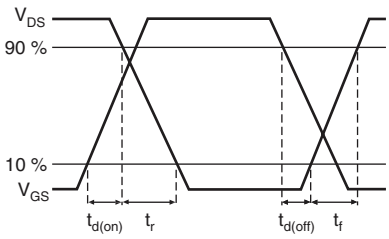


Fig. 12b - Switching Time Waveforms

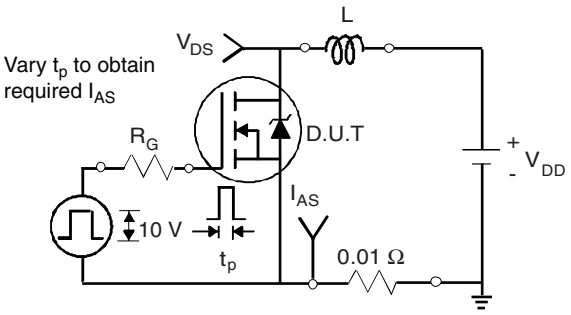


Fig. 13a - Unclamped Inductive Test Circuit

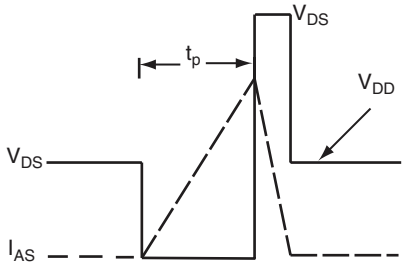


Fig. 13b - Unclamped Inductive Waveforms

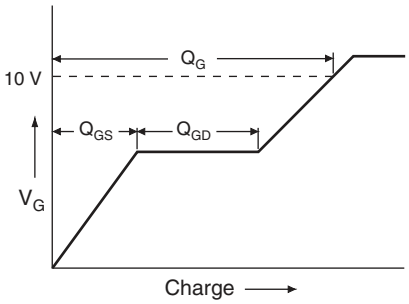


Fig. 14a - Basic Gate Charge Waveform

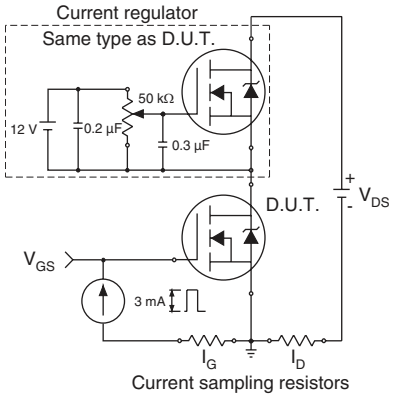
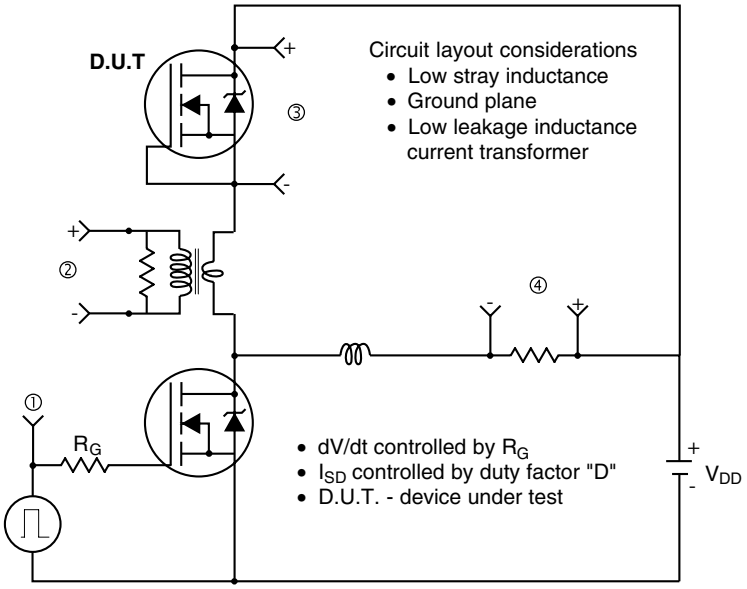
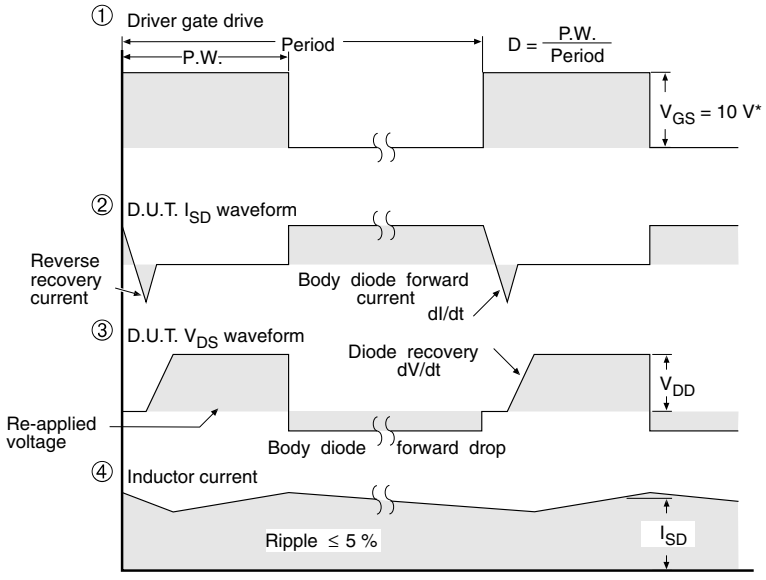


Fig. 14b - Gate Charge Test Circuit

Peak Diode Recovery dV/dt Test Circuit





* V_{GS} = 5 V for logic level and 3 V drive devices

Fig. 15 - For N-Channel

Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see www.vishay.com/ppg?91374.

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

单击下面可查看定价，库存，交付和生命周期等信息

>>Vishay(威世)