SPD08P06P-VB Datasheet

P-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ)
- 60	0.061 at V_{GS} = - 10 V	- 30	10
	0.072 at V_{GS} = - 4.5 V	- 25	

FEATURES

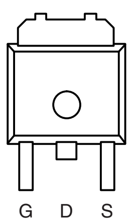
- Trench Power MOSFET
- 100 % UIS Tested

APPLICATIONS

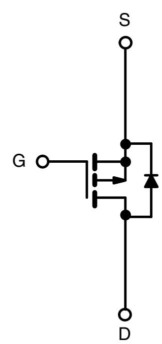
- Load Switch

RoHS COMPLIANT
HALOGEN FREE

TO-252



Top View



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS T_C = 25 °C, unless otherwise noted				
Parameter		**Symbol**	**Limit**	**Unit**
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current (T_J = 175 °C)	T_C = 25 °C	I_D	- 30	A
	T_C = 100 °C		- 25	
Pulsed Drain Current		I_{DM}	- 30	
Continuing Source Current (Diode Conduction)		I_S	- 20	
Avalanche Current		I_{AS}	- 20	
Single Pulse Avalanche Energy	L = 0.1 mH	E_{AS}	7.2	mJ
Maximum Power Dissipation	T_C = 25 °C	P_D	34[a]	W
	T_A = 25 °C		4[b]	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 175	°C

THERMAL RESISTANCE RATINGS					
Parameter		**Symbol**	**Typical**	**Maximum**	**Unit**
Junction-to-Ambient[b]	t ≤ 10 sec	R_{thJA}	20	25	°C/W
	Steady State		62	75	
Junction-to-Case		R_{thJC}	5	6	

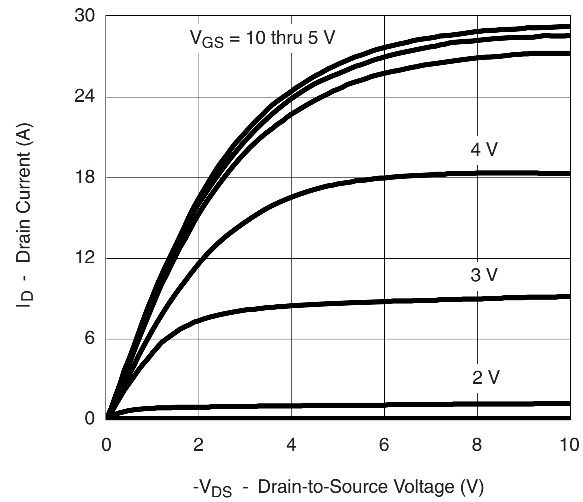
Notes:
a. See SOA curve for voltage derating.
b. Surface Mounted on 1" x 1" FR-4 boad.

SPECIFICATIONS T_J = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Min**	**Typ**[a]	**Max**	**Unit**
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = - 250 µA	- 60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 1.0	- 2.0	- 3.0	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 60 V, V_{GS} = 0 V			- 1	µA
		V_{DS} = - 60 V, V_{GS} = 0 V, T_J = 125 °C			- 50	
		V_{DS} = - 60 V, V_{GS} = 0 V, T_J = 175 °C			- 150	
On-State Drain Current[b]	$I_{D(on)}$	V_{DS} = - 5 V, V_{GS} = - 10 V	- 10			A
Drain-Source On-State Resistance[b]	$r_{DS(on)}$	V_{GS} = - 10 V, I_D = - 5 A		0.061		Ω
		V_{GS} = - 10 V, I_D = - 5 A, T_J = 125 °C		0.100		
		V_{GS} = - 10 V, I_D = - 5 A, T_J = 175 °C		0.150		
		V_{GS} = - 4.5 V, I_D = - 2 A		0.072		
Forward Transconductance[b]	g_{fs}	V_{DS} = - 15 V, I_D = - 5 A		8		S
Dynamic						
Input Capacitance	C_{iss}	V_{DS} = - 25 V, V_{GS} = 0 V, f = 1 MHz		1000		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			100		
Total Gate Charge	Q_g	V_{DS} = - 30 V, V_{GS} = - 10 V, I_D = - 8.4 A		10		nC
Gate-Source Charge	Q_{gs}			2.1		
Gate-Drain Charge	Q_{gd}			3.2		
Gate Resistance	R_g	f = 1 MHz		8.0		Ω
Turn-On Delay Time[c]	$t_{d(on)}$	V_{DD} = - 30 V, R_L = 3.57 Ω I_D ≅ - 8.4 A, V_{GEN} = - 10 V, R_G = 2.5 Ω		6		ns
Rise Time[c]	t_r			15		
Turn-Off Delay Time[c]	$t_{d(off)}$			16		
Fall Time[c]	t_f			8		
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)[b]						
Pulsed Current	I_{SM}				- 30	A
Forward Voltage[b]	V_{SD}	I_F = - 2 A, V_{GS} = 0 V		- 0.9	- 1.3	V
Reverse Recovery Time	t_{rr}	I_F = - 8 A, di/dt = 100 A/µs		50		ns
Reverse Recovery Time	Q_{rr}			80		nC

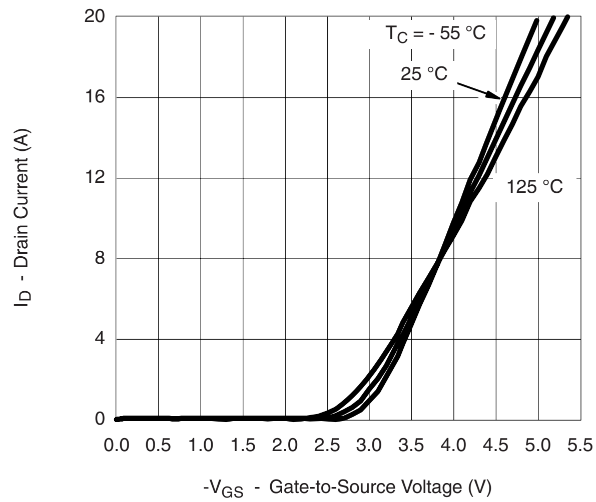
Notes:
a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

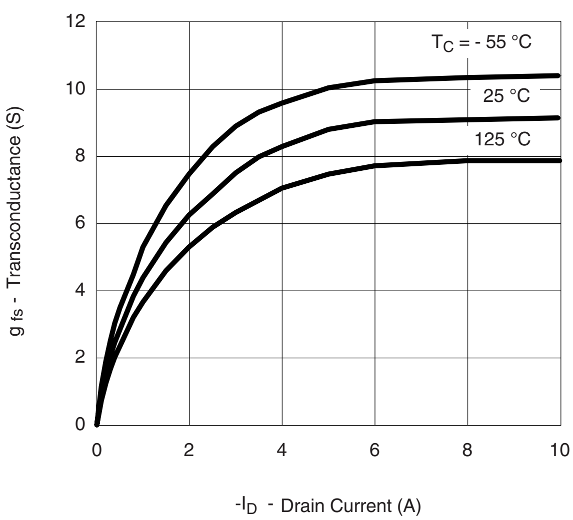
TYPICAL CHARACTERISTICS 25 °C unless noted



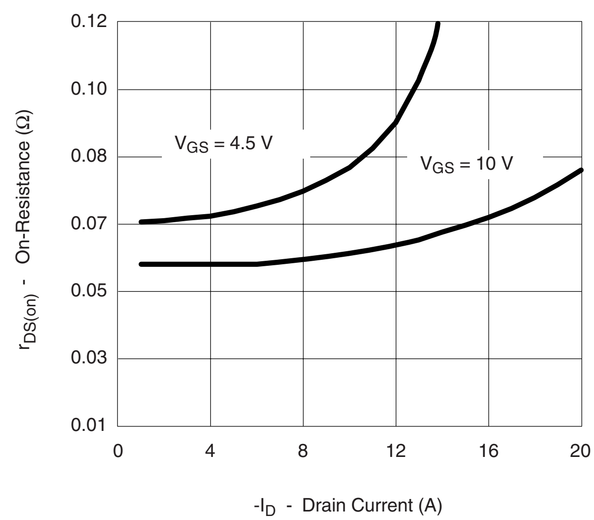
Output Characteristics



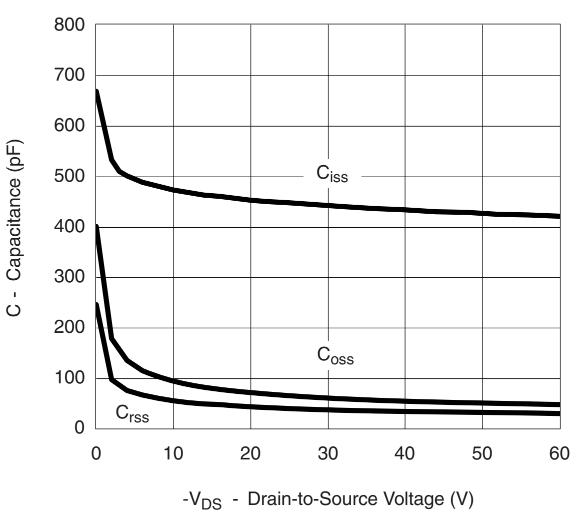
Transfer Characteristics



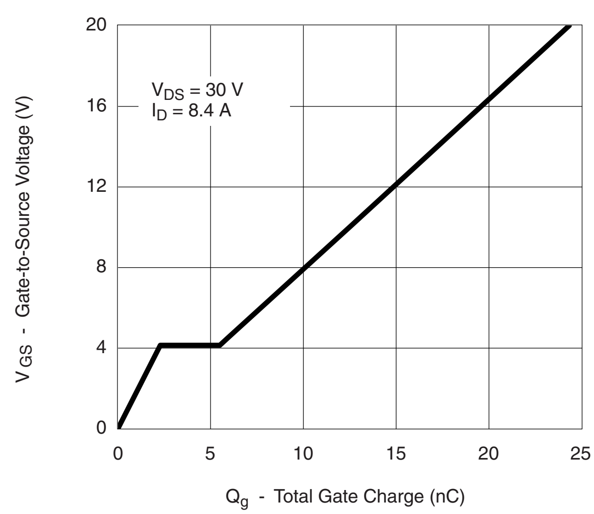
Transconductance



On-Resistance vs. Drain Current

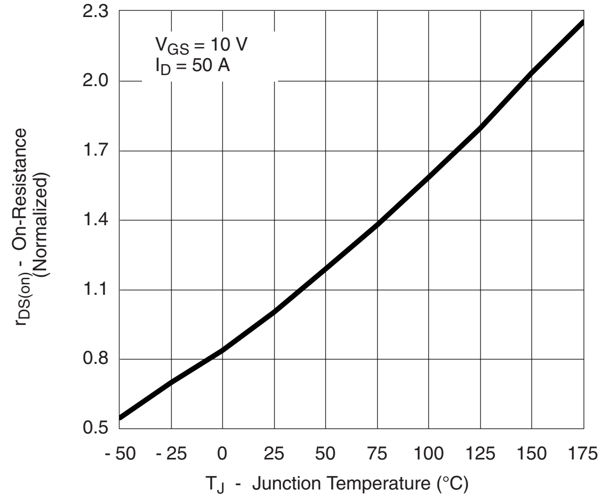


Capacitance

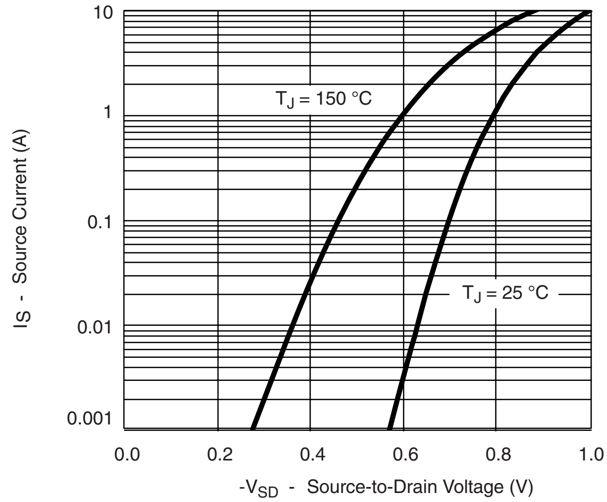


Gate Charge

TYPICAL CHARACTERISTICS 25 °C unless noted

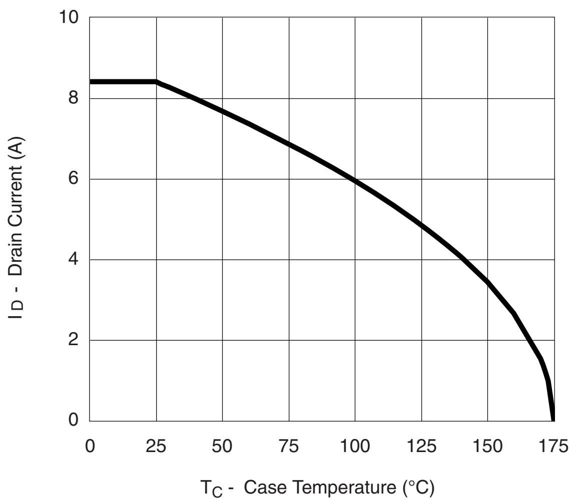


On-Resistance vs. Junction Temperature

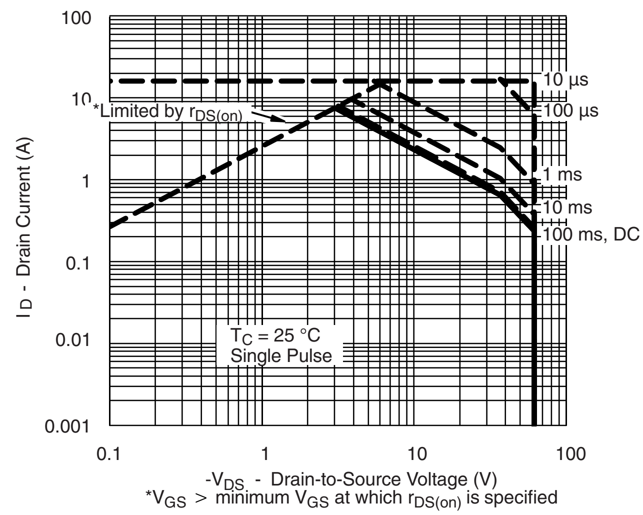


Source-Drain Diode Forward Voltage

THERMAL RATINGS

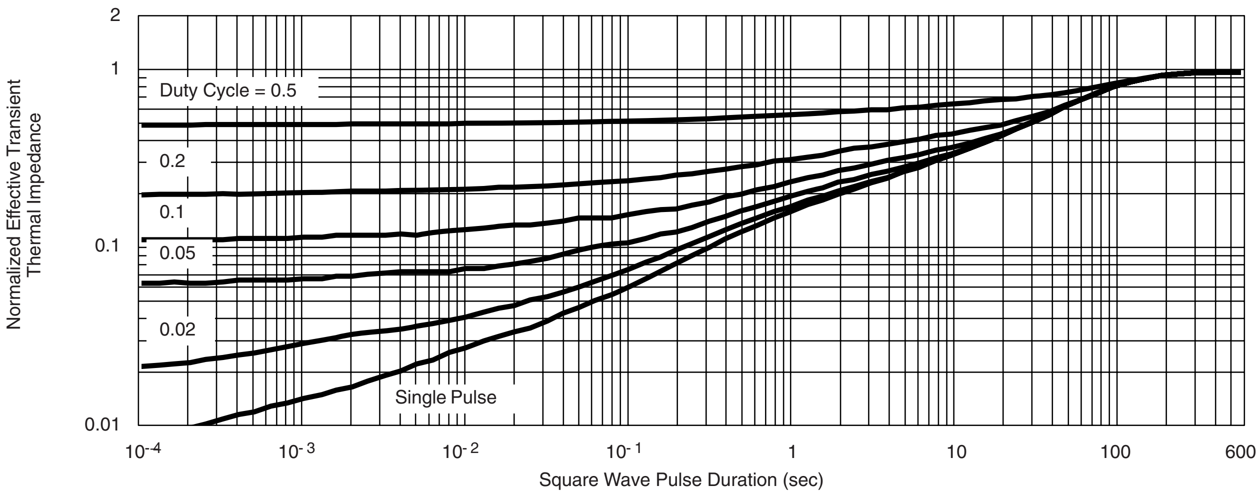


Drain Current vs. Case Temperature

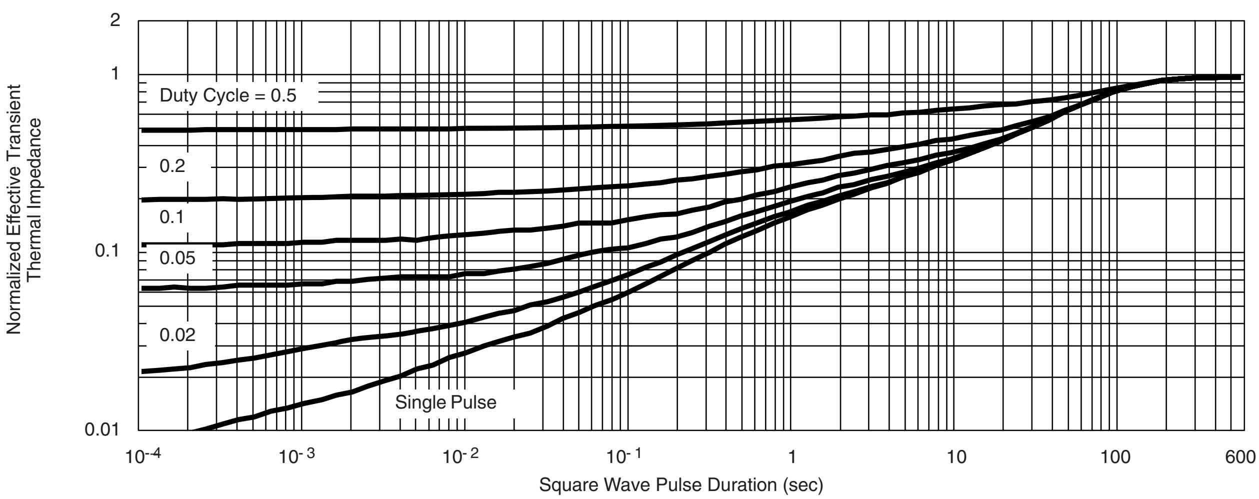


Safe Operating Area

THERMAL RATINGS

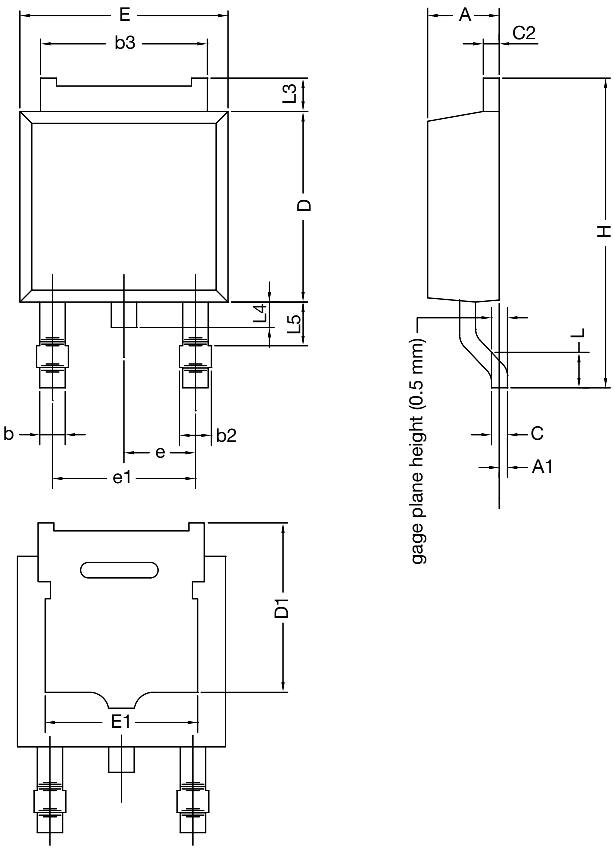


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

TO-252AA CASE OUTLINE

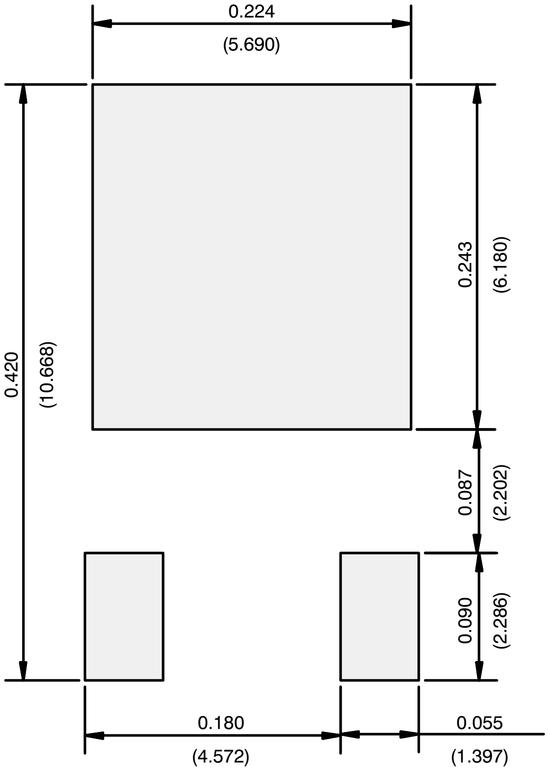


	MILLIMETERS		INCHES	
DIM.	**MIN.**	**MAX.**	**MIN.**	**MAX.**
A	2.18	2.38	0.086	0.094
A1	-	0.127	-	0.005
b	0.64	0.88	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	4.95	5.46	0.195	0.215
C	0.46	0.61	0.018	0.024
C2	0.46	0.89	0.018	0.035
D	5.97	6.22	0.235	0.245
D1	5.21	-	0.205	-
E	6.35	6.73	0.250	0.265
E1	4.32	-	0.170	-
H	9.40	10.41	0.370	0.410
e	2.28 BSC		0.090 BSC	
e1	4.56 BSC		0.180 BSC	
L	1.40	1.78	0.055	0.070
L3	0.89	1.27	0.035	0.050
L4	-	1.02	-	0.040
L5	1.14	1.52	0.045	0.060
ECN: X12-0247-Rev. M, 24-Dec-12 DWG: 5347				

Note

- Dimension L3 is for reference only.

RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads
Dimensions in Inches/(mm)

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