

D8P06E-VB TO252 Datasheet

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

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ)
- 60	0.090 at $V_{GS} = - 10$ V	- 30	10
	0.100 at $V_{GS} = - 4.5$ V	- 25	

FEATURES

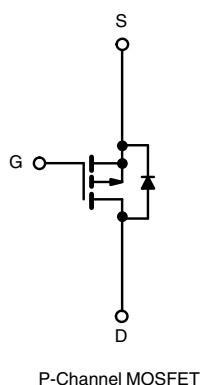
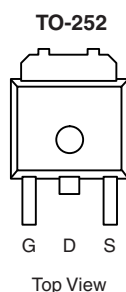
- Trench Power MOSFET
- 100 % UIS Tested

APPLICATIONS

- Load Switch



RoHS
COMPLIANT
HALOGEN
FREE



ABSOLUTE MAXIMUM RATINGS $T_C = 25^\circ\text{C}$, unless otherwise noted				
Parameter		Symbol	Limit	Unit
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	$T_C = 25^\circ\text{C}$	I_D	- 30	A
	$T_C = 100^\circ\text{C}$		- 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	$T_C = 25^\circ\text{C}$	P_D	34 ^a	W
	$T_A = 25^\circ\text{C}$		4 ^b	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient ^b	$t \leq 10$ sec	R_{thJA}	20	25	$^\circ\text{C/W}$
	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 board.

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	
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		0.090		Ω
		V _{GS} = - 10 V, I _D = - 5 A, T _J = 125 °C		0.135		
		V _{GS} = - 10 V, I _D = - 5 A, T _J = 175 °C		0.180		
		V _{GS} = - 4.5 V, I _D = - 2 A		0.100		
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:

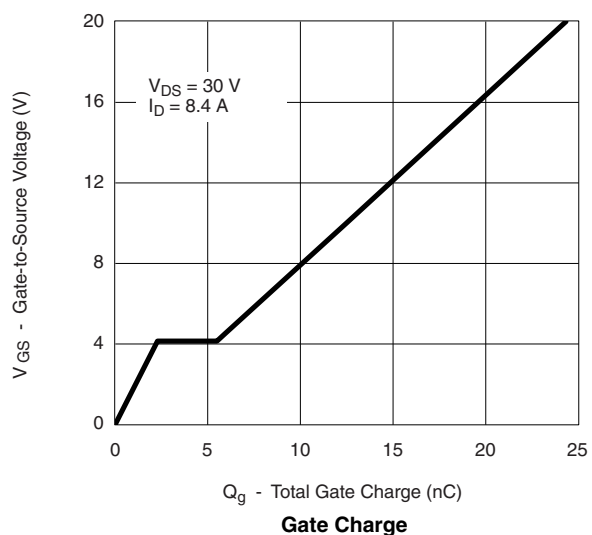
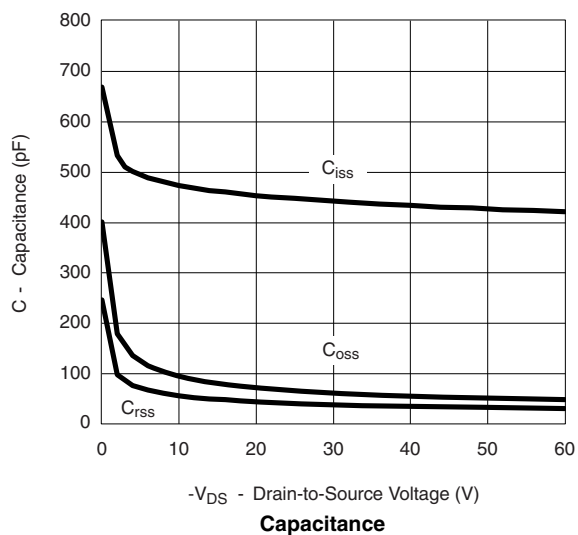
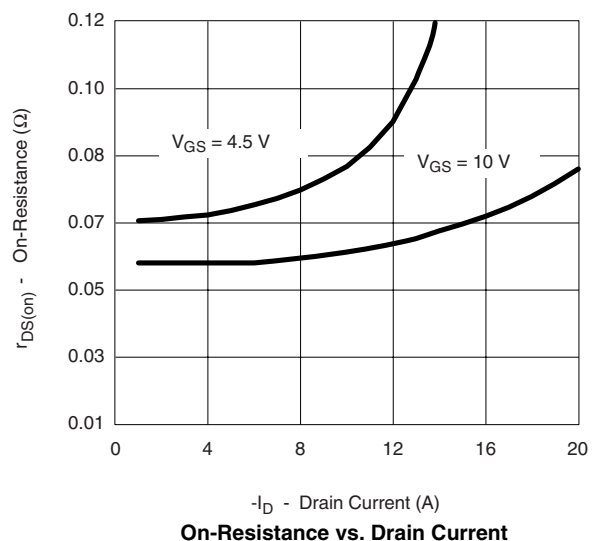
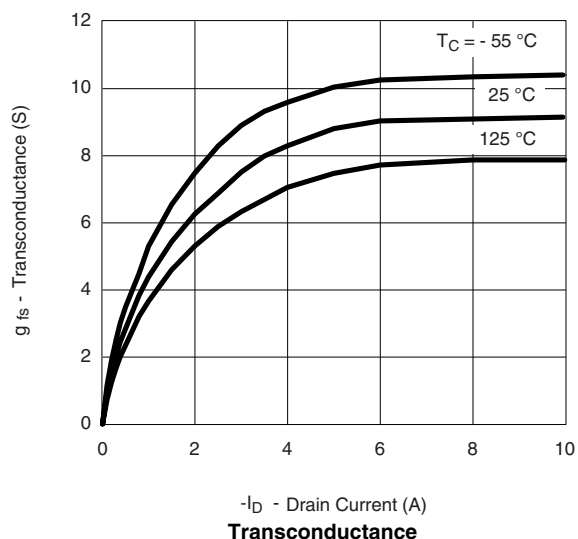
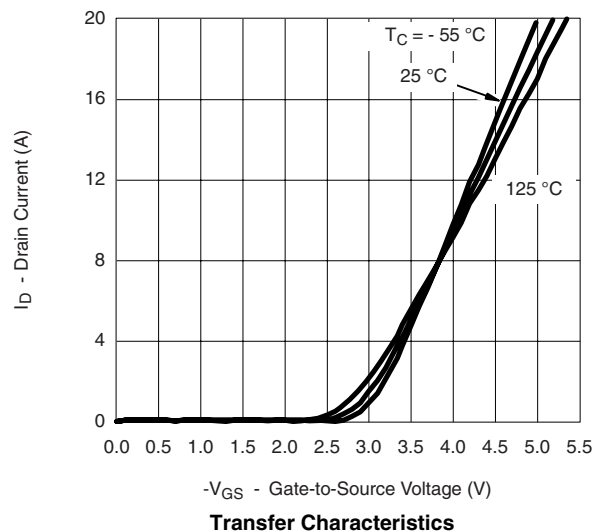
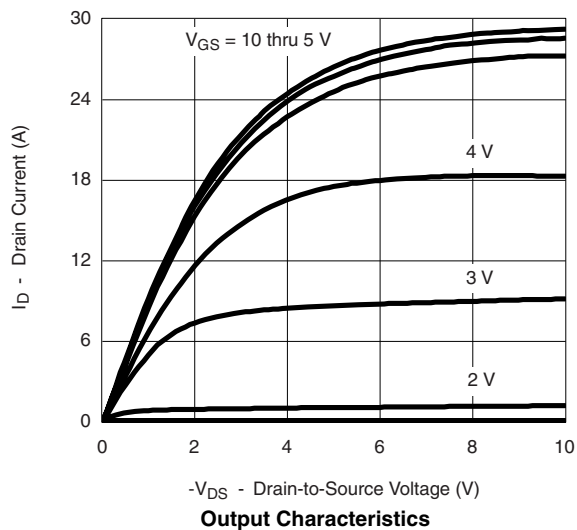
a. Guaranteed by design, not subject to production testing.

b. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

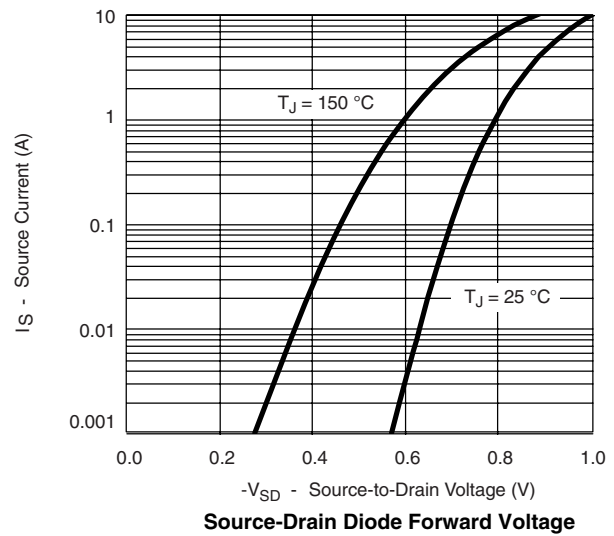
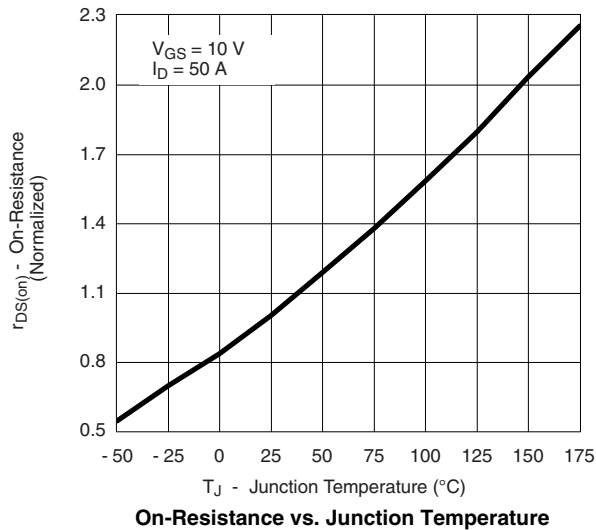
c. Independent of operating temperature.

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.

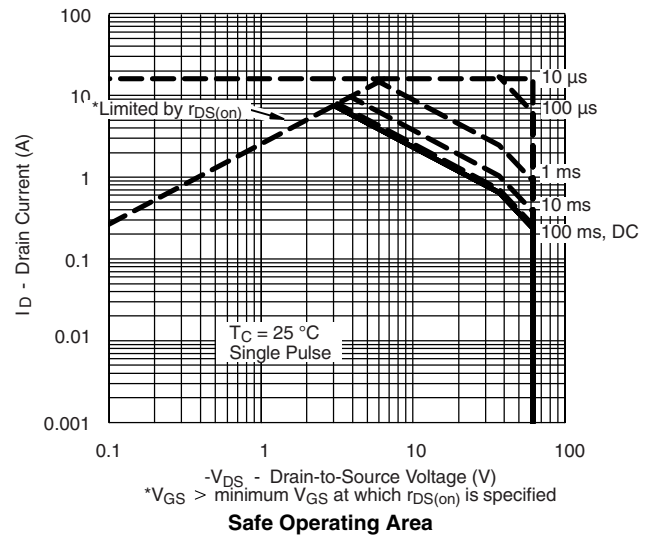
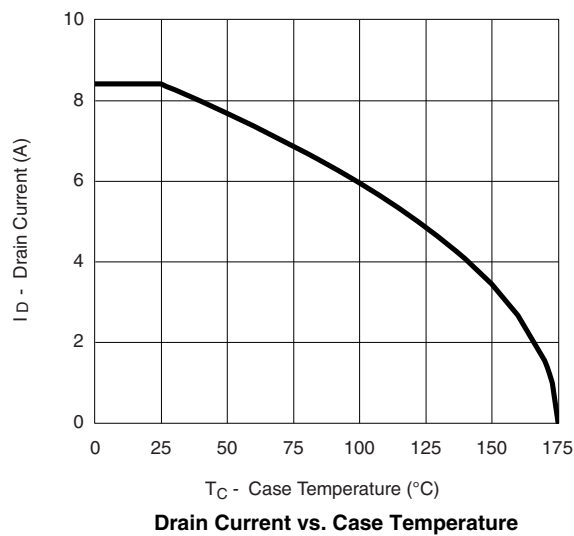
TYPICAL CHARACTERISTICS 25 °C unless noted



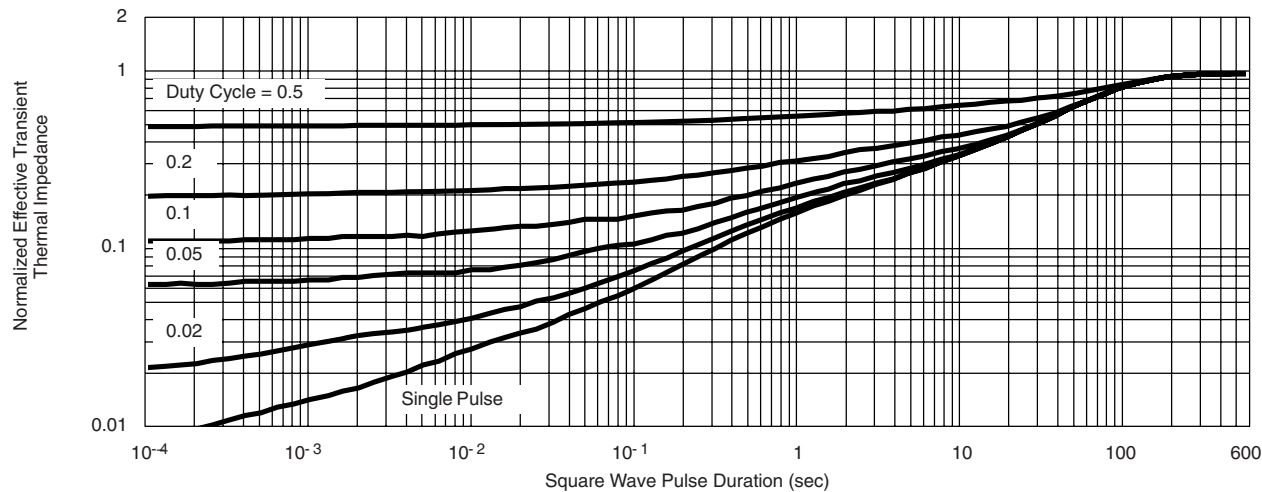
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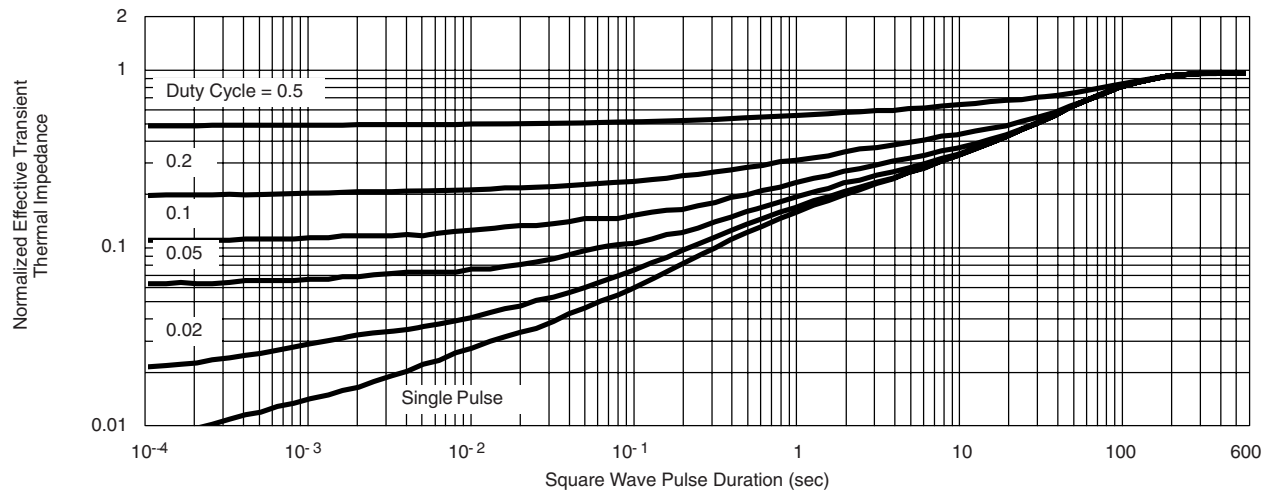
THERMAL RATINGS



THERMAL RATINGS

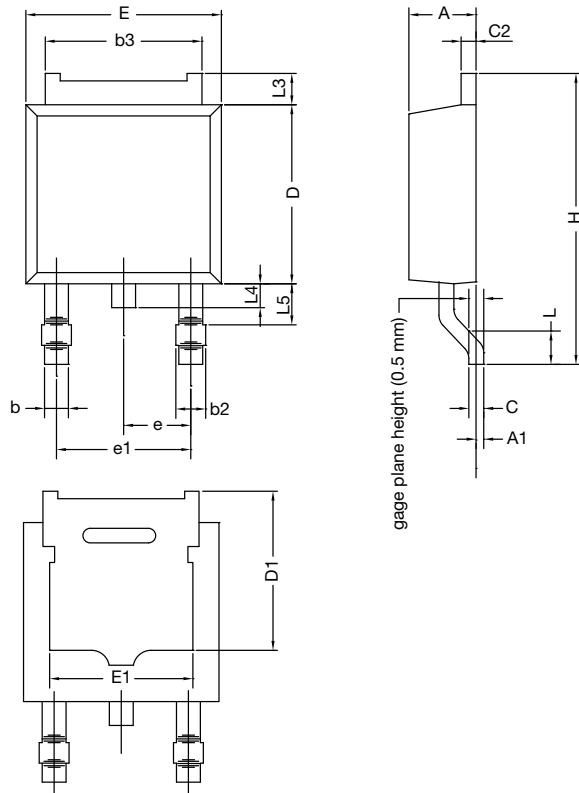


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

TO-252AA CASE OUTLINE

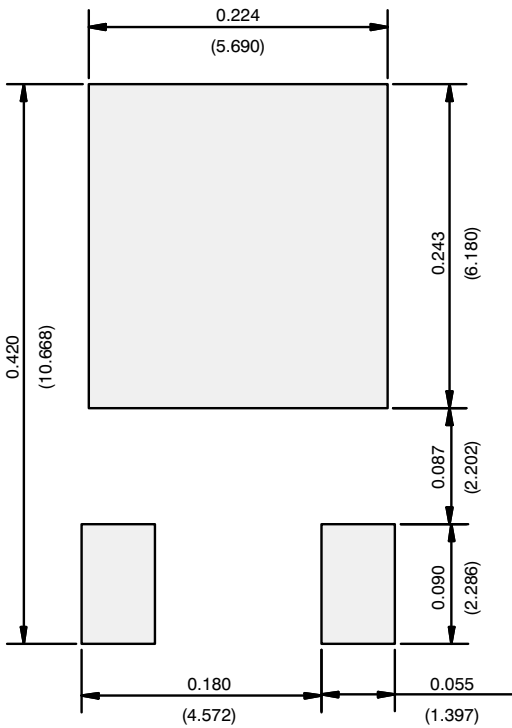


DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.38	0.086	0.094
A1	-	0.127	-	0.005
b	0.64	0.88	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	4.95	5.46	0.195	0.215
C	0.46	0.61	0.018	0.024
C2	0.46	0.89	0.018	0.035
D	5.97	6.22	0.235	0.245
D1	5.21	-	0.205	-
E	6.35	6.73	0.250	0.265
E1	4.32	-	0.170	-
H	9.40	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

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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