

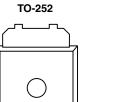
N-Channel 60 V (D-S) MOSFET

PRODUCT SUMMARY					
V _{DS} (V)	$R_{DS(on)}(\Omega)$ Max. $I_D(A)$		Q _g (Typ.)		
60	0.073 at V _{GS} = 10 V	18.2	19.8		
	0.085 at V _{GS} = 4.5 V	13.2	19.0		

FEATURES

- TrenchFET® Power MOSFET
- 100 % R_g and UIS Tested
- Material categorization:
 For definitions of compliance please see



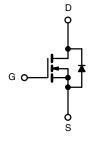


D

Drain Connected to Tab

APPLICATIONS

- DC/DC Converters
- DC/AC Inverters
- Motor Drives



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _C = 25 °C, unless otherwise noted)						
Parameter		Symbol	Limit	Unit		
Drain-Source Voltage	V _{DS}	60	V			
Gate-Source Voltage	V _{GS}	± 20				
Continuous Drain Current	T _C = 25 °C		16.9			
Continuous Diain Current	T _C = 70 °C	I _D	13.6	A		
Pulsed Drain Current (t = 300 μs)	I _{DM}	25				
Avalanche Current		I _{AS}	15			
Single Avalanche Energy ^a	L = 0.1 mH	E _{AS}	11.25	mJ		
Maximum Power Dissipation ^a	T _C = 25 °C	В	41.7 ^b	W		
Maximum Fower Dissipation	T _A = 25 °C ^c	P _D	2.1			
Operating Junction and Storage Tempe	rature Range	T _J , T _{stg}	- 55 to 150	°C		

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Limit	Unit		
Junction-to-Ambient (PCB Mount) ^c	R _{thJA}	60	°C/W		
Junction-to-Case (Drain)	R _{thJC}	3			

Notes:

- a. Duty cycle \leq 1 %.
- b. See SOA curve for voltage derating.
- c. When mounted on 1" square PCB (FR-4 material).
- d. Base on T_C = 25 °C.



Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit
Static				•		
Drain-Source Breakdown Voltage	V _{DS}	V_{DS} $V_{GS} = 0 \text{ V, } I_{D} = 250 \mu\text{A}$.,
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 250 \mu\text{A}$	1.0		3.0	V
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 250	nA
· · · · · · · · ·		V _{DS} = 60 V, V _{GS} = 0 V			1	μΑ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 150 °C			250	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 10 \text{ V}, V_{GS} = 10 \text{ V}$	20			Α
	_ (,	V _{GS} = 10 V, I _D = 6.6 A		0.073		
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 6 A		0.083		Ω
Forward Transconductance ^a	9 _{fs}	V _{DS} = 15 V, I _D = 6.6 A		25		S
Dynamic ^b				1		
Input Capacitance	C _{iss}			860		
Output Capacitance	C _{oss}	V _{DS} = 30 V, V _{GS} = 0 V, f = 1 MHz		85		pF
Reverse Transfer Capacitance	C _{rss}			40		
Total Gate Charge ^c	Q _g			19.8	30	nC
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 6.6 \text{ A}$		3.6		
Gate-Drain Charge ^c	Q _{gd}			4.1		
Gate Resistance	R _q	f = 1 MHz	0.4	2	4	Ω
Turn-On Delay Time ^c	t _{d(on)}			8	16	
Rise Time ^c	t _r	$V_{DD} = 30 \text{ V}, \text{ R}_{L} = 9.6 \Omega$		11	20	
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 5.2 \text{ A}, V_{GEN} = 10 \text{ V}, R_g = 1 \Omega$		18	27	
Fall Time ^c	t _f	-		5	10	
Turn-On Delay Time ^c	t _{d(on)}			38	57	ns
Rise Time ^c	t _r	$V_{DD} = 30 \text{ V}, R_{I} = 9.6 \Omega$		58	87	-
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 5.2 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_g = 1 \Omega$		18	27	
Fall Time ^c	t _f	<u> </u>		8	16	
Drain-Source Body Diode Ratings at	•	stics ^b T _C = 25 °C			<u> </u>	
Continuous Current	Is				16.9	
Pulsed Current	I _{SM}				25	Α
Forward Voltage ^a	V _{SD}	I _F = 5.2 A, V _{GS} = 0 V		0.8	1.5	V
Reverse Recovery Time	t _{rr}	. 33		34	51	ns
Peak Reverse Recovery Current	I _{RM(REC)}	I _F = 5.2 A, dl/dt = 100 A/μs		3	5	Α
Reverse Recovery Charge	Q _{rr}			50	75	nC

Notes:

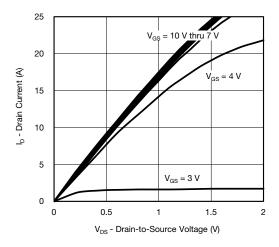
- a. Pulse test; pulse width \leq 300 $\mu s,$ duty cycle \leq 2 %. b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.

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.

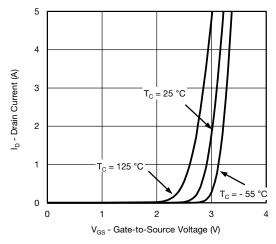
E-mail: China@VBsemi TEL:86-755-83251052



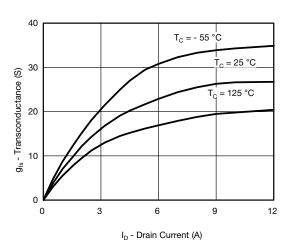
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



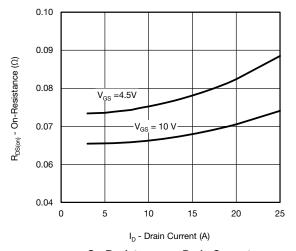
Output Characteristics



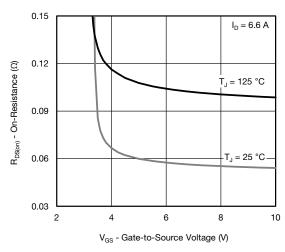
Transfer Characteristics



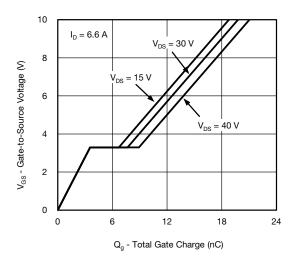
Transconductance



On-Resistance vs. Drain Current



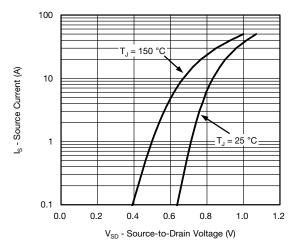
On-Resistance vs. Gate-to-Source Voltage



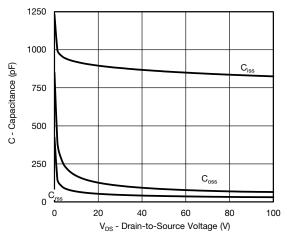
Gate Charge



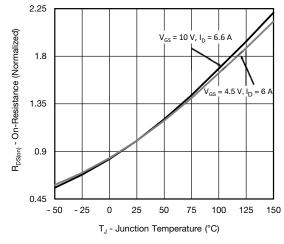
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



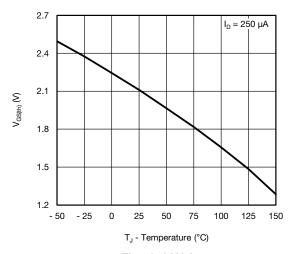
Source-Drain Diode Forward Voltage



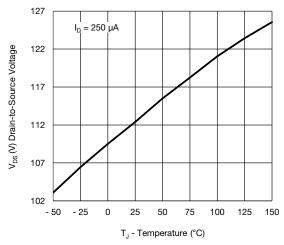
Capacitance



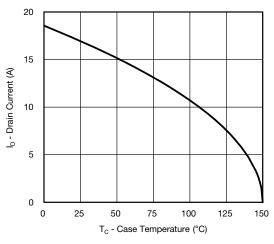
On-Resistance vs. Junction Temperature



Threshold Voltage



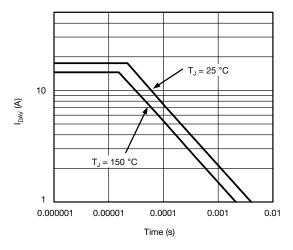
Drain Source Breakdown vs. Junction Temperature

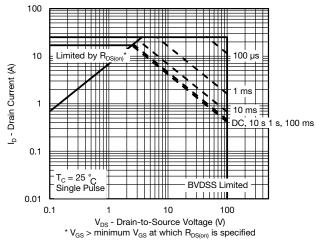


Current Derating



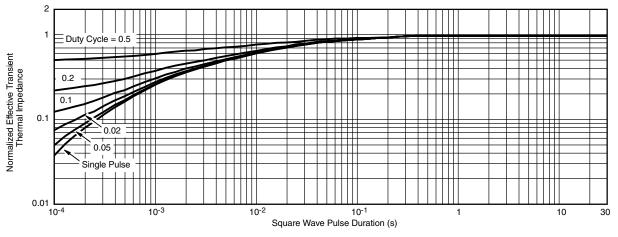
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)





Single Pulse Avalanche Current Capability vs. Time





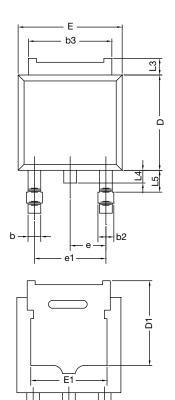
Normalized Thermal Transient Impedance, Junction-to-Case

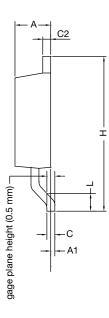
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TO-252AA Case Outline





	MILLIMETERS		INCHES	
DIM.	MIN.	MAX.	MIN.	MAX.
Α	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
С	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	4.10	-	0.161	-
E	6.35	6.73	0.250	0.265
E1	4.32	-	0.170	-
Н	9.40	10.41	0.370	0.410
е	2.28 BSC		0.090 BSC	
e1	4.56 BSC		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	1.01	1.52	0.040	0.060
ECN: T16-0236-Rev. P, 16-May-16 DWG: 5347				

DWG: 5347

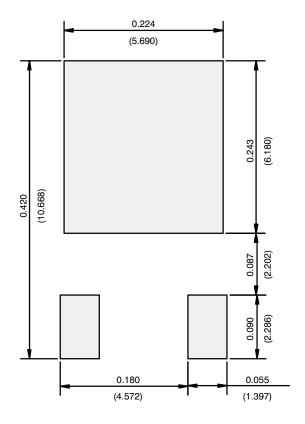
Notes

• Dimension L3 is for reference only.

E-mail: China@VBsemi TEL:86-755-83251052



RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads Dimensions in Inches/(mm)

E-mail: China@VBsemi TEL:86-755-83251052



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