

P-Channel 60 V (D-S) MOSFET

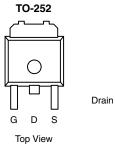
PRODUCT SUMMARY					
V _{DS} (V)	$R_{DS(on)}(\Omega) \qquad I_{D}(A)^{d}$		Q _g (Typ)		
- 60	0.046 at V _{GS} = - 10 V	- 35	26		
- 00	0.058 at V _{GS} = - 4.5 V	- 30	20		

FEATURES

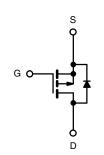
- Halogen-free According to IEC 61249-2-21
 Definition
- TrenchFET[®] Power MOSFET
- 100 % UIS Tested
- Compliant to RoHS Directive 2002/95/EC

APPLICATIONS

- High Side Switch for Full Bridge Converter
- DC/DC Converter for LCD Display



Drain Connected to Tab



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise note)						
Parameter	Symbol	Limit	Unit			
Drain-Source Voltage	V _{DS}	- 60	v			
Gate-Source Voltage	V _{GS}	± 20	v			
Continuous Drain Current (T_{I} = 150 °C)	T _C = 25 °C	I _D	- 35			
Continuous Drain Current (1j = 150°C)	T _C = 125 °C	D	- 25	А		
Pulsed Drain Current	I _{DM}	- 100				
Avalanche Current, Single Pulse	L = 0.1 mH	I _{AS}	- 22			
Repetitive Avalanche Energy, Single Pulse ^a		E _{AS}	24.2	mJ		
Power Dissinction	T _C = 25 °C	Pn	38.5 ^c	w		
Power Dissipation	T _A = 25 °C		2.3 ^{b, c}			
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 150	°C		

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Martine to Anthing b	t ≤ 10 s	R _{thJA}	17	21	°C/W	
Maximum Junction-to-Ambient ^b	Steady State		45	55		
Maximum Junction-to-Case	•	R _{thJC}	2.7	3.25		
Notes:						

a. Duty cycle \leq 1 %.

b. When mounted on 1" square PCB (FR-4 material).

c. See SOA curve for voltage derating.

d. Based up on $T_C = 25$ °C.

HALOGEN

FREE

Available



Parameter	Symbol	Test Conditions	Min .	Тур.	Max.	Unit	
Static		•		-			
Drain-Source Breakdown Voltage	V _{DS}	V_{GS} = 0 V, I _D = - 250 μ A	- 60			V	
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = -250 \ \mu A$	- 1		- 3	V	
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 100	nA	
		$V_{DS} = -60 \text{ V}, \text{ V}_{GS} = 0 \text{ V}$			- 1		
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = -60 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 125 ^{\circ}\text{C}$			- 50	μA	
		V_{DS} = - 60 V, V_{GS} = 0 V, T_{J} = 150 ° C			- 125		
On-State Drain Current ^a	I _{D(on)}	$V_{DS} = -5 V, V_{GS} = -10 V$	- 20			Α	
		V _{GS} = - 10 V, I _D = - 10 A	0.04				
Drain Course On Chata Desistance ³	Beau	V_{GS} = - 10 V, I _D = - 10 A, T _J = 125 °C		0.095			
Drain-Source On-State Resistance ^a	R _{DS(on)}	V_{GS} = - 10 V, I _D = - 10 A, T _J = 150 °C		0.115		Ω	
		V _{GS} = - 4.5 V, I _D = - 5 A		0.058			
Forward Transconductance ^a	9 _{fs}	V _{DS} = - 15 V, I _D = - 10 A		22		S	
Dynamic ^b							
Input Capacitance	C _{iss}			1900		pF	
Output Capacitance	C _{oss}	$V_{GS} = 0 V$, $V_{DS} = -25 V$, f = 1 MHz		130			
Reverse Transfer Capacitance	C _{rss}			90			
Total Gate Charge ^c	Qg			26	40	nC	
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = -30$ V, $V_{GS} = -10$ V, $I_{D} = -10$ A		4.5			
Gate-Drain Charge ^c	Q _{gd}			7		1	
Gate Resistance	Rg	f = 1 MHz		7		Ω	
Turn-On Delay Time ^c	t _{d(on)}			8	15		
Rise Time ^c	t _r	V_{DD} = - 30 V, R_L = 3 Ω		9	15		
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong$ - 19 A, V_{GEN} = - 10 V, R_g = 2.5 Ω		65	100	- ns	
Fall Time ^c	t _f			30	45		
Drain-Source Body Diode and Characte	eristics $(T_c = 2)$	5 °C) ^b				1	
Continuous Current	I _S				- 20		
Pulsed Current	I _{SM}			1	- 30	A	
Forward Voltage ^a	V _{SD}	I _F = - 19 A, V _{GS} = 0 V		- 1	- 1.5	V	
Reverse Recovery Time	t _{rr}	I _F = - 19 A, di/dt = 100 A/μs		41	61	ns	

Notes:

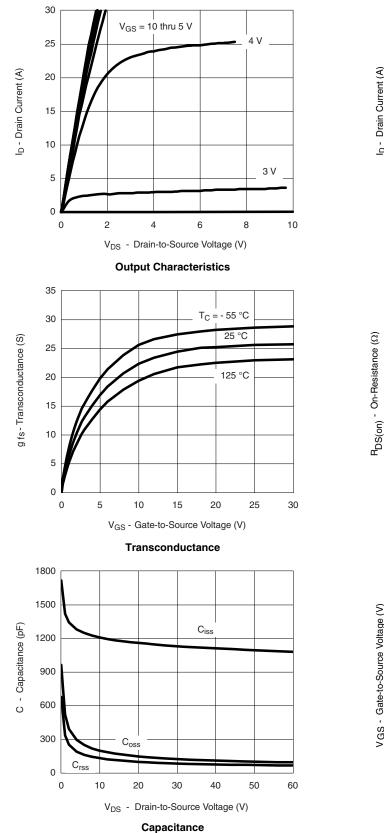
a. Pulse test; pulse width \leq 300 $\mu s,$ duty cycle \leq 2 %.

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

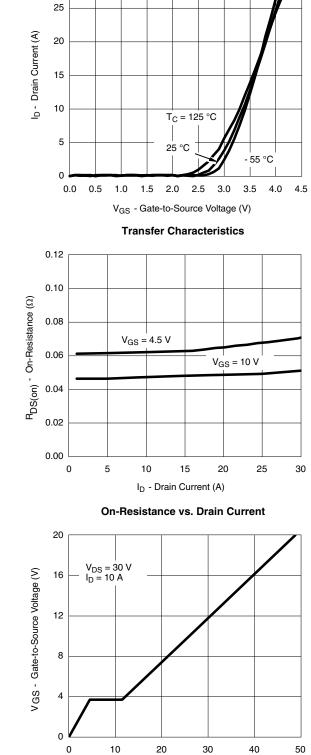
c. Independent of operating temperature.

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.





TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

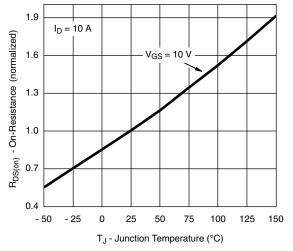


Qg - Total Gate Charge (nC)

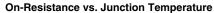
Gate Charge

30

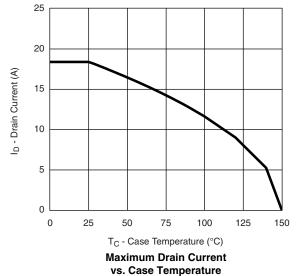


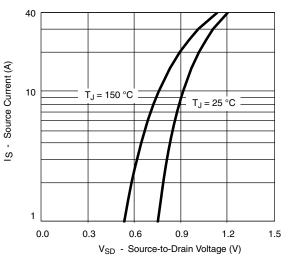


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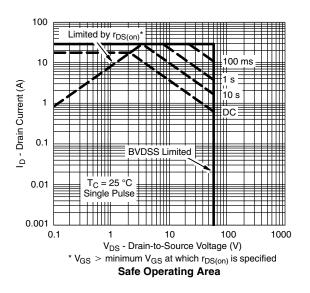


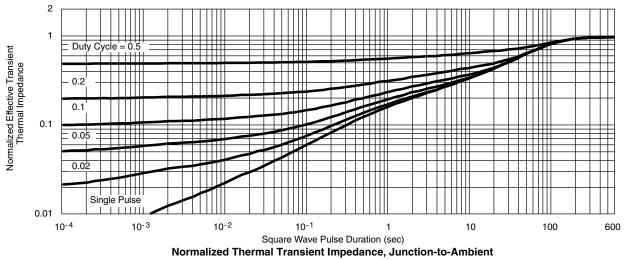






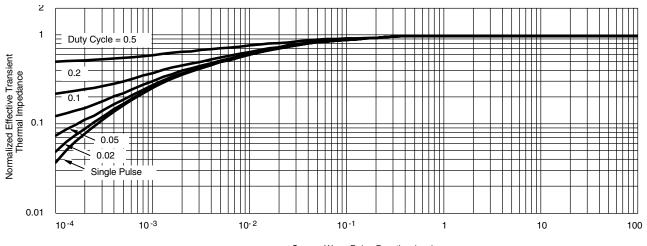
Source-Drain Diode Forward Voltage







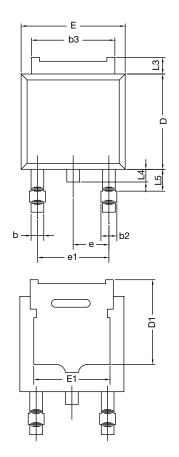
THERMAL RATINGS



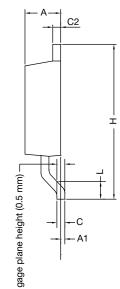
Square Wave Pulse Duration (sec)

Normalized Thermal Transient Impedance, Junction-to-Case





TO-252AA Case Outline



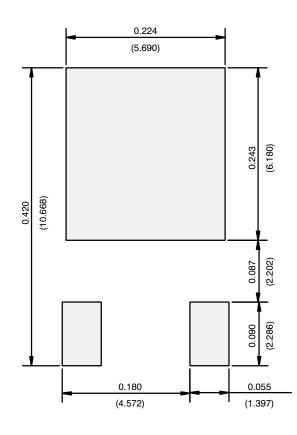
	MILLIMETERS		INC	HES	
DIM.	MIN.	MAX.	MIN.	MAX.	
А	2.18	2.38	0.086	0.094	
A1	-	0.127	-	0.005	
b	0.64	0.88	0.025	0.035	
b2	0.76	1.14	0.030	0.045	
b3	4.95	5.46	0.195	0.215	
С	0.46	0.61	0.018	0.024	
C2	0.46	0.89	0.018	0.035	
D	5.97	6.22	0.235	0.245	
D1	4.10	-	0.161	-	
Е	6.35	6.73	0.250	0.265	
E1	4.32	-	0.170	-	
Н	9.40	10.41	0.370	0.410	
е	2.28 BSC		0.090 BSC		
e1	4.56 BSC		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					

Notes

• Dimension L3 is for reference only.



RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads Dimensions in Inches/(mm)



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