

P-Channel 60 V (D-S) MOSFET

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

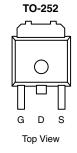
FEATURES

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

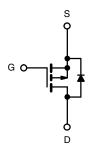


APPLICATIONS

- · 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	1 v		
Continuous Drain Current (T _J = 150 °C)	T _C = 25 °C	I _D	- 35			
Continuous Diam Current (1) = 130 O)	T _C = 125 °C] ^{'D} [- 25	_		
Pulsed Drain Current		I _{DM}	- 100	A		
Avalanche Current, Single Pulse	L = 0.1 mH	I _{AS}	- 22			
Repetitive Avalanche Energy, Single Pulse ^a	L = 0.1 IIII	E _{AS}	24.2	mJ		
Dower Discinstics	T _C = 25 °C	P _D	38.5 ^c	w		
Power Dissipation	T _A = 25 °C	1 'D	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	
Marrian un lumation to Anabianto	t ≤ 10 s	R _{thJA}	17	21	°C/W	
Maximum Junction-to-Ambient ^D	Steady State	' 'thJA	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.

服务热线:400-655-8788

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Parameter Sy		Test Conditions	Min . Typ.		Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 \text{ V}, I_D = -250 \mu\text{A}$	- 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}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
		V _{DS} = - 60 V, V _{GS} = 0 V			- 1		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = - 60 V, V _{GS} = 0 V, T _J = 125 °C			- 50	μΑ	
		$V_{DS} = -60 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 150 ^{\circ} \text{ C}$			- 125		
On-State Drain Current ^a	I _{D(on)}	$V_{DS} = -5 \text{ V}, V_{GS} = -10 \text{ V}$	- 20			Α	
		V _{GS} = - 10 V, I _D = - 10 A	0.046				
Drain Course On State Desistance	Book	$V_{GS} = -10 \text{ V}, I_D = -10 \text{ A}, T_J = 125 \text{ °C}$		0.095		Ω	
Drain-Source On-State Resistance ^a	R _{DS(on)}	$V_{GS} = -10 \text{ V}, I_D = -10 \text{ A}, T_J = 150 \text{ °C}$		0.115			
		$V_{GS} = -4.5 \text{ V}, I_D = -5 \text{ A}$		0.058			
Forward Transconductance ^a	g _{fs}	V _{DS} = - 15 V, I _D = - 10 A		22		S	
Dynamic ^b							
Input Capacitance	C _{iss}			1900		pF	
Output Capacitance	C _{oss}	$V_{GS} = 0 \text{ V}, V_{DS} = -25 \text{ V}, f = 1 \text{ MHz}$		130			
Reverse Transfer Capacitance	C _{rss}			90			
Total Gate Charge ^c	Qg			26	40		
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = -30 \text{ V}, V_{GS} = -10 \text{ V}, I_{D} = -10 \text{ A}$		4.5		nC	
Gate-Drain Charge ^c	Q _{gd}			7			
Gate Resistance	R _g	f = 1 MHz	f = 1 MHz			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)}	$I_D \cong -19 \text{ A}, V_{GEN} = -10 \text{ V}, R_g = 2.5 \Omega$		65	100	ns	
Fall Time ^c	t _f			30	45		
Drain-Source Body Diode and Charact	eristics (T _C = 2	5 °C) ^b		<u> </u>			
Continuous Current	I _S				- 20		
Pulsed Current	I _{SM}				- 30	Α	
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	

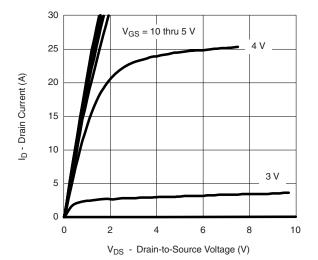
Notes

- 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.

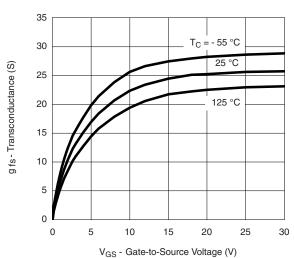
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



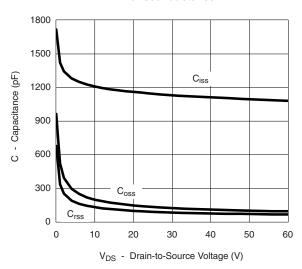
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



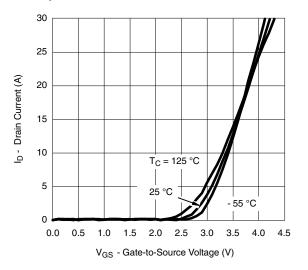
Output Characteristics



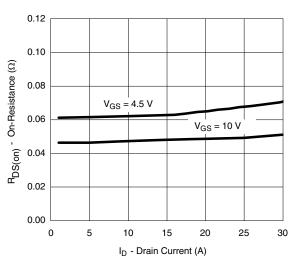
Transconductance



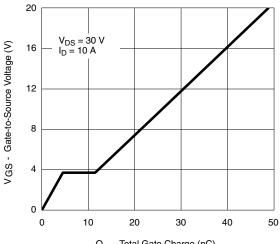
Capacitance



Transfer Characteristics



On-Resistance vs. Drain Current

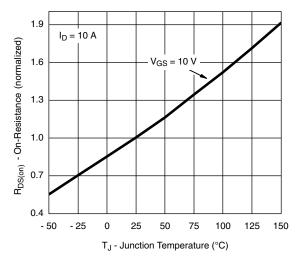


 $\mathbf{Q}_{\mathbf{g}}\,$ - Total Gate Charge (nC)

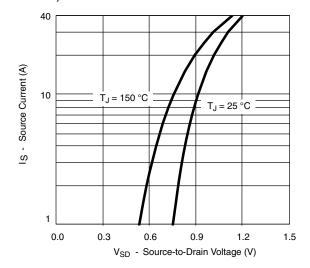
Gate Charge



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

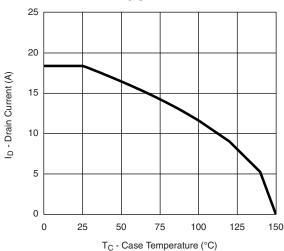


On-Resistance vs. Junction Temperature

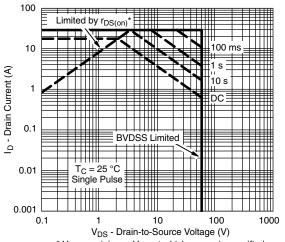


Source-Drain Diode Forward Voltage

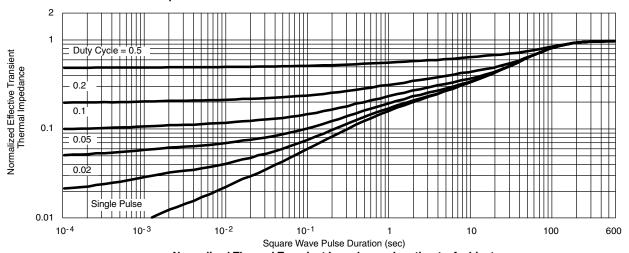
THERMAL RATINGS



Maximum Drain Current vs. Case Temperature



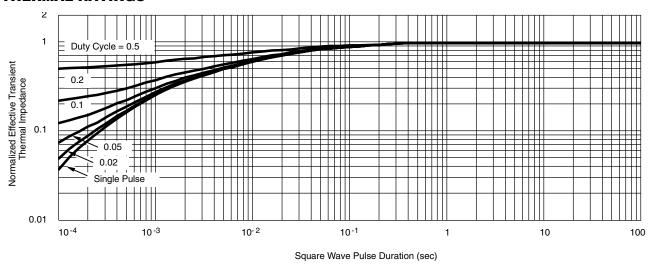
* V_{GS} > minimum V_{GS} at which r_{DS(on)} is specified **Safe Operating Area**



Normalized Thermal Transient Impedance, Junction-to-Ambient



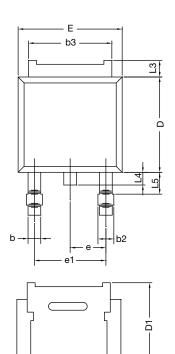
THERMAL RATINGS

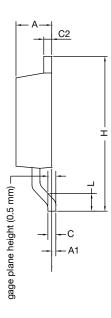


Normalized Thermal Transient Impedance, Junction-to-Case



TO-252AA Case Outline





	MILLIN	MILLIMETERS		HES	
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	-	
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	4.56 BSC		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					

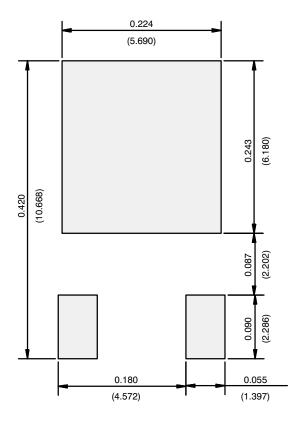
DWG: 5347

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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