

N-Channel 100 V (D-S) 175 °C MOSFET

PRODUC	T SUMMARY				
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$	I _D (A)			
100	0.004 at V _{GS} = 10 V	140 ^a			

FEATURES

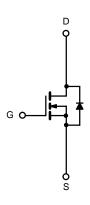
- TrenchFET® Power MOSFET
- New Package with Low Thermal Resistance
- 100 % R_g Tested





D²PAK (TO-263)





N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS $T_C = 25$ °C, unless otherwise noted						
Parameter	Symbol	Limit	Unit			
Drain-Source Voltage	V _{DS}	100	V			
Gate-Source Voltage	V _{GS}	± 20				
Continuous Drain Current (T _{.1} = 175 °C)	T _C = 25 °C	1	140 ^a	A		
Continuous Diain Current (1 j = 173 C)	T _C = 125 °C	l ID	87 ^a			
Pulsed Drain Current		I _{DM}	440	1 ^		
Avalanche Current	I _{AR}	75]			
Repetitive Avalanche Energy ^b	L = 0.1 mH	E _{AR}	280	mJ		
Maximum Power Dissipation ^b	T _C = 25 °C	В	375 ^c	W		
iviaximum Fower Dissipation	T _A = 25 °C	P _D	3.75]		
Operating Junction and Storage Temperatu	T _J , T _{stg}	- 55 to 175	°C			

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Limit	Unit		
Junction-to-Ambient	PCB Mount (TO-263) ^d	R _{thJA}	40	°C/W		
Junction-to-Case (Drain)	R _{thJC}	0.4	C/VV			

Notes:

- a. Package limited.
 b. Duty cycle ≤ 1 %.
 c. See SOA curve for voltage derating.
 d. When mounted on 1" square PCB (FR-4 material).

服务热线:400-655-8788

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Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{DS}	$V_{DS} = 0 \text{ V, } I_D = 250 \mu\text{A}$ 100					
Gate-Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	2		4	V	
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
		V _{DS} = 100 V, V _{GS} = 0 V			1	μA	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V, T _J = 125 °C			50		
		V _{DS} = 100 V, V _{GS} = 0 V, T _J = 175 °C			250		
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 5 \text{ V}, V_{GS} = 10 \text{ V}$	120			Α	
		V _{GS} = 10 V, I _D = 30 A		0.004		Ω	
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 30 A, T _J = 125 °C		0.017			
		V _{GS} = 10 V, I _D = 30 A, T _J = 175 °C		0.025			
Forward Transconductance ^a	9 _{fs}	V _{DS} = 15 V, I _D = 30 A	25			S	
Dynamic ^b							
Input Capacitance	C _{iss}			5500		pF	
Output Capacitance	C _{oss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		750			
Reverse Transfer Capacitance	C _{rss}			280			
Total Gate Charge ^c	Qg			110	160		
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = 50 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 85 \text{ A}$		24		nC	
Gate-Drain Charge ^c	Q_{gd}			24			
Gate Resistance	R _g		1.0		6.2	Ω	
Turn-On Delay Time ^c	t _{d(on)}			20	30		
Rise Time ^c	t _r	$V_{DD} = 50 \text{ V, R}_{L} = 0.6 \Omega$		125	200	no	
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 85 \text{ A}, V_{GEN} = 10 \text{ V}, R_g = 2.5 \Omega$		55	85	ns	
Fall Time ^c	t _f			130	195		
Source-Drain Diode Ratings and Cha	aracteristics 7	T _C = 25 °C ^b					
Continuous Current	I _S				140	Α	
Pulsed Current	I _{SM}				240		
Forward Voltage ^a	V _{SD}	I _F = 85 A, V _{GS} = 0 V		1.0	1.5	V	
Reverse Recovery Time	t _{rr}			70	140	ns	
Peak Reverse Recovery Charge	I _{RM(REC)}	I _F = 50 A, dl/dt = 100 A/μs		5.5	10	Α	
Reverse Recovery Charge	Q _{rr}			0.19	0.35	μC	

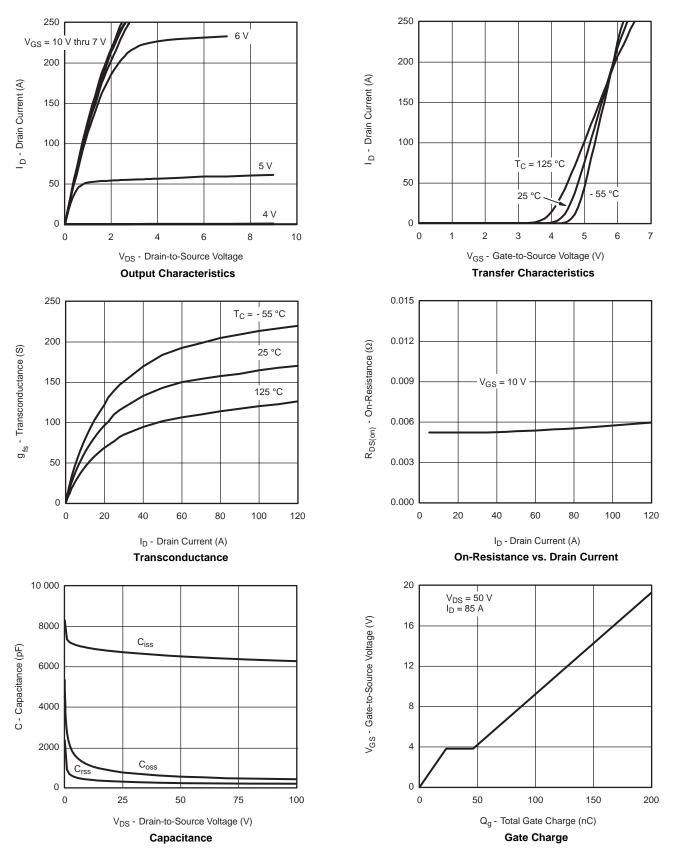
Notes:

- a. Pulse test; pulse width \leq 300 µs, 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.

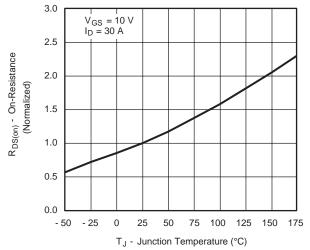


TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

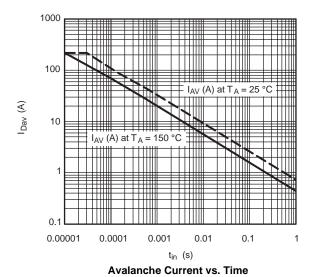




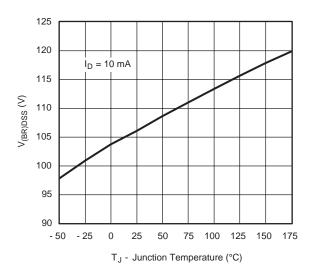
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



On-Resistance vs. Junction Temperature



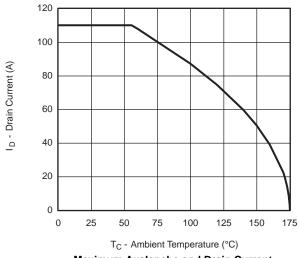
Source-Drain Diode Forward Voltage



Drain Source Breakdown vs. Junction Temperature

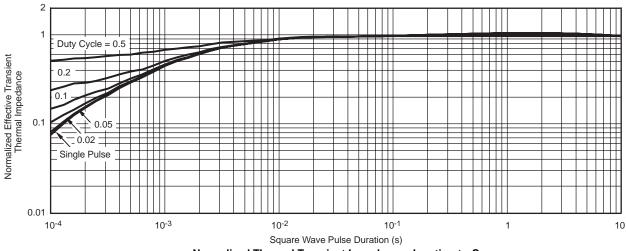


THERMAL RATINGS



 $(V) = \frac{1000}{100}$ $\frac{100}{100}$ $\frac{100}{100}$ $\frac{100}{100}$ $\frac{100}{100}$ $\frac{1}{100}$ $\frac{1}{100}$

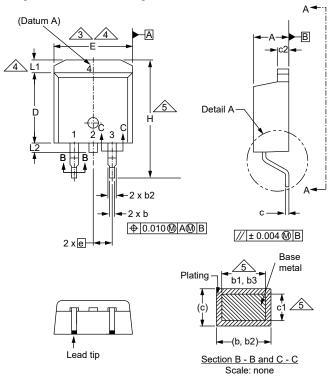
Maximum Avalanche and Drain Current vs. Case Temperature

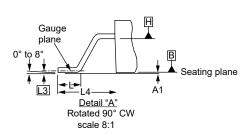


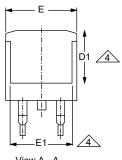
Normalized Thermal Transient Impedance, Junction-to-Case



TO-263AB (HIGH VOLTAGE)







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MIL	.LIN	ΙEΤ	ER
MIN.			MΑ
6.86			-

	MILLIN	IMETERS INCHES		HES
DIM.	MIN.	MAX.	MIN.	MAX.
Α	4.06	4.83	0.160	0.190
A1	0.00	0.25	0.000	0.010
b	0.51	0.99	0.020	0.039
b1	0.51	0.89	0.020	0.035
b2	1.14	1.78	0.045	0.070
b3	1.14	1.73	0.045	0.068
С	0.38	0.74	0.015	0.029
c1	0.38	0.58	0.015	0.023
c2	1.14	1.65	0.045	0.065
D	8.38	9.65	0.330	0.380

	MILLIMETERS		INCHES		
DIM.	MIN.	MAX.	MIN.	MAX.	
D1	6.86	-	0.270	-	
Е	9.65	10.67	0.380	0.420	
E1	6.22	-	0.245	-	
е	2.54	BSC	0.100 BSC		
Н	14.61	15.88	0.575	0.625	
L	1.78	2.79	0.070	0.110	
L1	-	1.65	-	0.066	
L2	-	1.78	-	0.070	
L3	0.25 BSC		0.010	BSC	
L4	4.78	5.28	0.188	0.208	

ECN: S-82110-Rev. A, 15-Sep-08

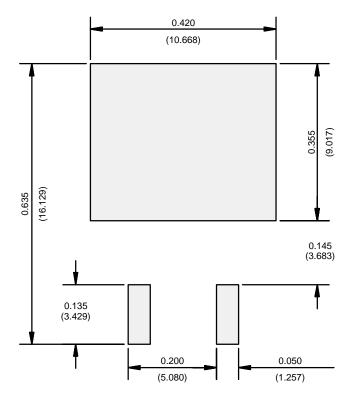
DWG: 5970

Notes

- 1. Dimensioning and tolerancing per ASME Y14.5M-2018.
- 2. Dimensions are shown in millimeters (inches).
- 3. Dimension D and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outmost extremes of the plastic body at datum A.
- 4. Thermal PAD contour optional within dimension E, L1, D1 and E1.
- 5. Dimension b1 and c1 apply to base metal only.
- 6. Datum A and B to be determined at datum plane H.
- 7. Outline conforms to JEDEC outline to TO-263AB.



RECOMMENDED MINIMUM PADS FOR D2PAK: 3-Lead



Recommended Minimum Pads Dimensions in Inches/(mm)



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