

N-Channel 30 V (D-S) MOSFET

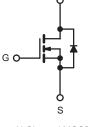
PRODUCT SUMMARY	
V _{DS} (V)	30
$R_{DS(on)}(\Omega)$ at $V_{GS} = 10 V$	0.019
$R_{DS(on)}(\Omega)$ at $V_{GS} = 4.5 V$	0.021
I _D (A)	7
Configuration	Single

FEATURES

- TrenchFET[®] Power MOSFET
- + 100 % $\rm R_g$ and UIS Tested







N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _C	= 25 °C, unles	s otherwise noted)		
PARAMETER		SYMBOL	LIMIT	UNIT	
Drain-Source Voltage		V _{DS}	30	V	
Gate-Source Voltage		V _{GS}	± 20	v	
Continuous Drain Current	T _C = 25 °C	۱ _D	7		
Continuous Drain Current	T _C = 125 °C	١D	4.5		
Continuous Source Current (Diode Conduction)		I _S	5	А	
Pulsed Drain Current ^a		I _{DM}	31		
Single Pulse Avalanche Current	L = 0.1 mH	I _{AS}	10		
Single Pulse Avalanche Energy		E _{AS}	5	mJ	
Maximum Douver Dissinction?	T _C = 25 °C	- P _D	4	W	
Maximum Power Dissipation ^a	$T_{\rm C} = 125 ^{\circ}{\rm C}$	ı.D	1.3	۷V	
Operating Junction and Storage Temperature Range	e	T _J , T _{stg}	- 55 to + 175	°C	

THERMAL RESISTANCE RATINGS				
PARAMETER		SYMBOL	LIMIT	UNIT
Junction-to-Ambient	PCB Mount ^b	R _{thJA}	110	°C/W
Junction-to-Foot (Drain)		R _{thJF}	38	C/ W

Notes

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

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

c. Parametric verification ongoing.

SPECIFICATIONS ($T_C = 25 \ ^{\circ}C$,	unless otherv	vise noted)					
PARAMETER	SYMBOL	TES	T CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static	·	•			•		
Drain-Source Breakdown Voltage	V _{DS}	V_{GS} = 0 V, I _D = 250 µA		30	-	-	v
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =	= V _{GS} , I _D = 250 μΑ	0.5	-	1.5	v
Gate-Source Leakage	I _{GSS}	V _{DS} =	0 V, V_{GS} = ± 20 V	-	-	± 100	nA
		$V_{GS} = 0 V$	V _{DS} = 30 V	-	-	1	
Zero Gate Voltage Drain Current	I _{DSS}	$V_{GS} = 0 V$	V_{DS} = 30 V, T_{J} = 125 °C	-	-	50	μA
		$V_{GS} = 0 V$	V_{DS} = 30 V, T_{J} = 175 °C	-	-	150	
On-State Drain Current ^a	I _{D(on)}	$V_{GS} = 10 V$	$V_{DS} \ge 5 V$	10	-	-	A
		V _{GS} = 10 V	I _D = 6 A	-	0.019	-	
Drain-Source On-State Resistance ^a	P	$V_{GS} = 4.5 V$	I _D = 4.9 A	-	0.021	-	Ω
	R _{DS(on)}	$V_{GS} = 10 V$	I _D = 6 A, T _J = 125 °C	-	0.054	-	
		V _{GS} = 10 V	l _D = 6 A, T _J = 175 °C	-	0.064	-	
Forward Transconductance ^b	9 _{fs}	V _{DS} = 15 V, I _D = 5 A		-	21	-	S
Dynamic ^b							_
Input Capacitance	C _{iss}			-	295	-	
Output Capacitance	C _{oss}	$V_{GS} = 0 V$	V _{DS} = 15 V, f = 1 MHz	-	67	-	pF
Reverse Transfer Capacitance	C _{rss}			-	25	-	
Total Gate Charge ^c	Qg			-	6	-	
Gate-Source Charge ^c	Q _{gs}	$V_{GS} = 10 V$	$V_{DS} = 15 \text{ V}, \text{ I}_{D} = 6 \text{ A}$	-	1.2	-	nC
Gate-Drain Charge ^c	Q _{gd}	1		-	1	-	
Gate Resistance	R _g	f = 1 MHz		3.0	6.65	11	Ω
Turn-On Delay Time ^c	t _{d(on)}			-	6	9	
Rise Time ^c	t _r	$V_{DD} = 15 \text{ V}, \text{ R}_{1} = 2.5 \Omega$		-	12	18	1
Turn-Off Delay Time ^c	t _{d(off)}	00	$V_{GEN} = 10 \text{ V}, \text{ R}_{g} = 1 \Omega$	-	13	20	ns
Fall Time ^c	t _f	1		-	8	12	1
Source-Drain Diode Ratings and Char	acteristics ^b						
Pulsed Current ^a	I _{SM}			-	-	31	Α
Forward Voltage	V _{SD}	I _F :	= 3 A, V _{GS} = 0 V	-	0.8	1.1	V
-	~				1		

Notes

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

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

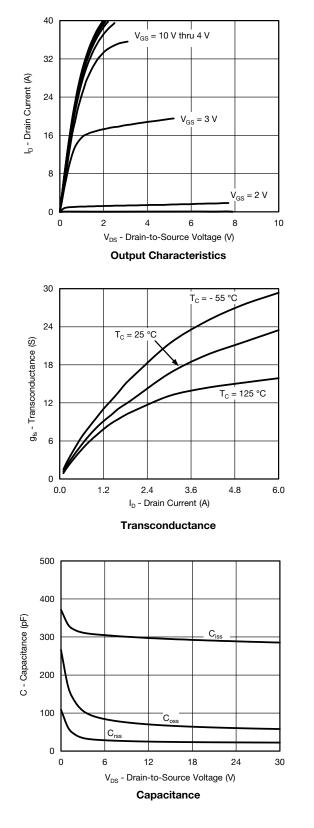
c. Independent of operating temperature.

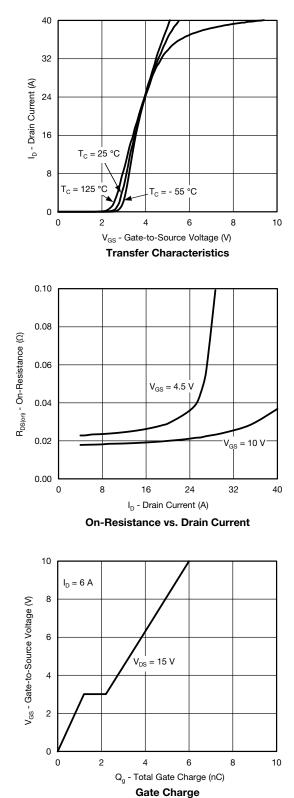
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

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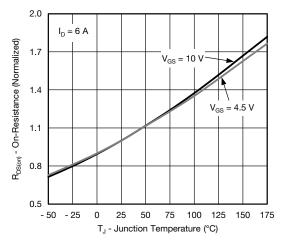
TYPICAL CHARACTERISTICS ($T_A = 25$ °C, unless otherwise noted)



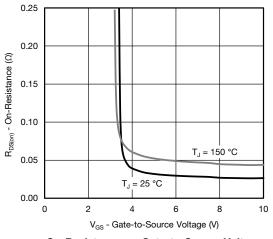




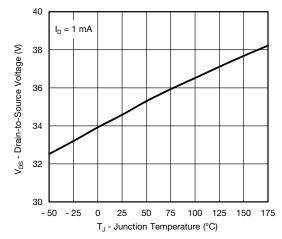
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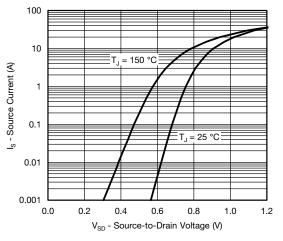
On-Resistance vs. Junction Temperature



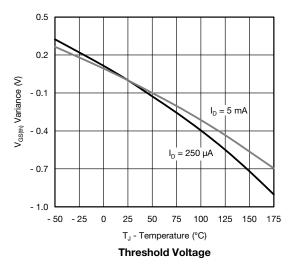
On-Resistance vs. Gate-to-Source Voltage



Drain Source Breakdown vs. Junction Temperature

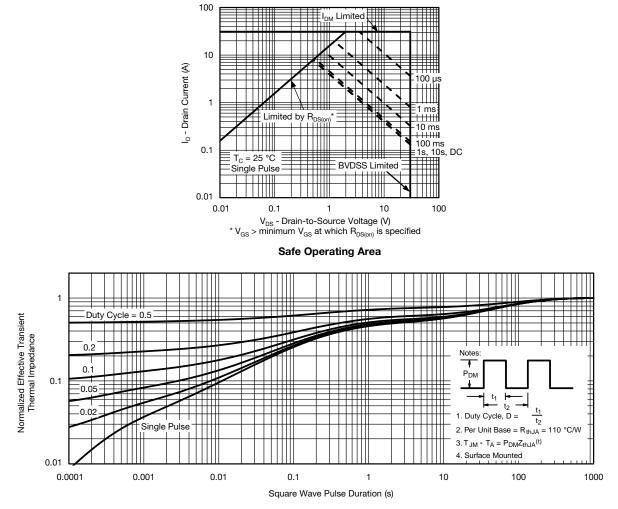


Source-Drain Diode Forward Voltage





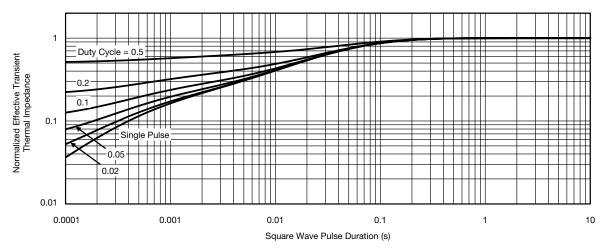
THERMAL RATINGS ($T_A = 25 \text{ °C}$, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



THERMAL RATINGS ($T_A = 25 \text{ °C}$, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Foot

Note

• The characteristics shown in the two graphs

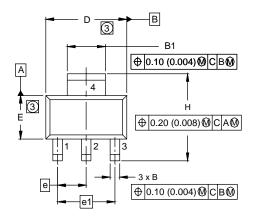
- Normalized Transient Thermal Impedance Junction-to-Ambient (25 °C)

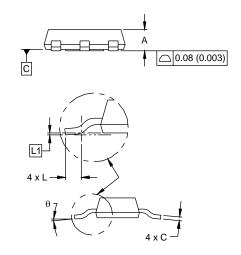
- Normalized Transient Thermal Impedance Junction-to-Foot (25 °C)

are given for general guidelines only to enable the user to get a "ball park" indication of part capabilities. The data are extracted from single pulse transient thermal impedance characteristics which are developed from empirical measurements. The latter is valid for the part mounted on printed circuit board - FR4, size 1" x 1" x 0.062", double sided with 2 oz. copper, 100 % on both sides. The part capabilities can widely vary depending on actual application parameters and operating conditions.



SOT-223 (HIGH VOLTAGE)





DIM.	MILLI	METERS	INCHES		
	MIN.	MAX.	MIN.	MAX.	
А	1.55	1.80	0.061	0.071	
В	0.65	0.85	0.026	0.033	
B1	2.95	3.15	0.116	0.124	
С	0.25	0.35	0.010	0.014	
D	6.30	6.70	0.248	0.264	
E	3.30	3.70	0.130	0.146	
е	2.30 BSC		0.0905 BSC		
e1	4.60 BSC		0.181 BSC		
Н	6.71	7.29	0.264	0.287	
L	0.91	-	0.036	-	
L1	0.061 BSC		0.002	4 BSC	
θ	-	10'	-	10'	

Notes

1. Dimensioning and tolerancing per ASME Y14.5M-1994.

2. Dimensions are shown in millimeters (inches).

3. Dimension do not include mold flash.

4. Outline conforms to JEDEC outline TO-261AA.



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