

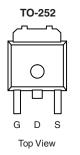
## N-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY				
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A) <sup>a</sup>		
60	0.025 at V <sub>GS</sub> = 10 V	35		
	0.030 at V <sub>GS</sub> = 4.5 V	30		

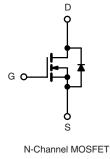
#### **FEATURES**

- TrenchFET<sup>®</sup> Power MOSFET
- 175 °C Junction Temperature





Drain Connected to Tab



ABSOLUTE MAXIMUM RATINGS T <sub>C</sub> =	25 °C, unless othe	rwise noted		
Parameter		Symbol	Limit	Unit
Gate-Source Voltage		V <sub>GS</sub>	± 20	V
	T <sub>C</sub> = 25 °C		35	
Continuous Drain Current (T <sub>J</sub> = 175 °C) <sup>b</sup>	T <sub>C</sub> = 100 °C		28	
Pulsed Drain Current		I <sub>DM</sub>	100	А
Continuous Source Current (Diode Conduction)		۱ <sub>S</sub>	23	
Avalanche Current		I <sub>AS</sub>	I <sub>AS</sub> 20	
Single Avalanche Energy (Duty Cycle $\leq$ 1 %)	L = 0.1 mH	E <sub>AS</sub>	20	mJ
Menimum Denne Dissischien	T <sub>C</sub> = 25 °C	Р	100	14/
Maximum Power Dissipation	T <sub>A</sub> = 25 °C	• P <sub>D</sub> –	3 <sup>a</sup>	W
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>sta</sub>	- 55 to 175	°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a</sup>	$t \le 10 \text{ sec}$	- R <sub>thJA</sub>	18	22	°C/W
Maximum Junction-to-Ambient*	Steady State		40	50	
Maximum Junction-to-Case		R <sub>thJC</sub>	3.2	4	

Notes:

a. Surface Mounted on 1" x 1" FR4 board, t  $\leq$  10 sec.

<b>SPECIFICATIONS</b> $T_J = 25 \text{ °C}$ , unless otherwise noted							
Parameter	Symbol	Test Conditions	Min	Typ <sup>a</sup>	Max	Unit	
Static	•						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	$V_{GS} = 0 V, I_D = 250 \mu A$	60			V	
Gate Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_D = 250 \ \mu A$	1.0	2.0	3.0	V	
Gate-Body Leakage	I <sub>GSS</sub>	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 100	nA	
Zero Gate Voltage Drain Current		$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}$			1		
	I <sub>DSS</sub>	$V_{DS} = 60 \text{ V}, \text{ V}_{GS} = 0 \text{ V}, \text{ T}_{J} = 125 ^{\circ}\text{C}$			50	μΑ	
		$V_{DS} = 60 \text{ V}, \text{ V}_{GS} = 0 \text{ V}, \text{ T}_{J} = 175 ^{\circ}\text{C}$			250		
On-State Drain Current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V	50			А	
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A		0.025	0.031	Ω	
	r	$V_{GS}$ = 10 V, I <sub>D</sub> = 15 A, T <sub>J</sub> = 125 °C			0.055		
Drain-Source On-State Resistance <sup>b</sup>	r <sub>DS(on)</sub>	$V_{GS}$ = 10 V, I <sub>D</sub> = 15 A, T <sub>J</sub> = 175 °C			0.069		
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 10 A		0.030	0.045		
Forward Transconductance <sup>b</sup>	9 <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 15 A		20		S	
Dynamic <sup>a</sup>							
Input Capacitance	C <sub>iss</sub>			670		pF	
Output Capacitance	C <sub>oss</sub>	$V_{GS}$ = 0 V, $V_{DS}$ = 25 V, f = 1 MHz		140			
Reverse Transfer Capacitance	C <sub>rss</sub>			60			
Total Gate Charge <sup>c</sup>	Qg			11	17	nC	
Gate-Source Charge <sup>c</sup>	Q <sub>gs</sub>	$V_{DS}$ = 30 V, $V_{GS}$ = 10 V, $I_{D}$ = 23 A		3			
Gate-Drain Charge <sup>c</sup>	Q <sub>gd</sub>			3			
Turn-On Delay Time <sup>c</sup>	t <sub>d(on)</sub>			8	15		
Rise Time <sup>c</sup>	t <sub>r</sub>	$V_{DD} = 30 \text{ V}, \text{ R}_{\text{L}} = 1.3 \Omega$ $\text{I}_{\text{D}} \cong 23 \text{ A}, \text{ V}_{\text{GEN}} = 10 \text{ V}, \text{ R}_{\text{g}} = 2.5 \Omega$		15	25	ns	
Turn-Off Delay Time <sup>c</sup>	t <sub>d(off)</sub>			30	45		
Fall Time <sup>c</sup>	t <sub>f</sub>			25	40		
Source-Drain Diode Ratings and Cha	aracteristics	(T <sub>C</sub> = 25 °C)					
Pulsed Current	I <sub>SM</sub>				50	А	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>F</sub> = 15 A, V <sub>GS</sub> = 0 V		1.0	1.5	V	
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 15 A, di/dt = 100 A/μs		30	60	ns	

Notes:

a. For design aid only; not subject to production testing.

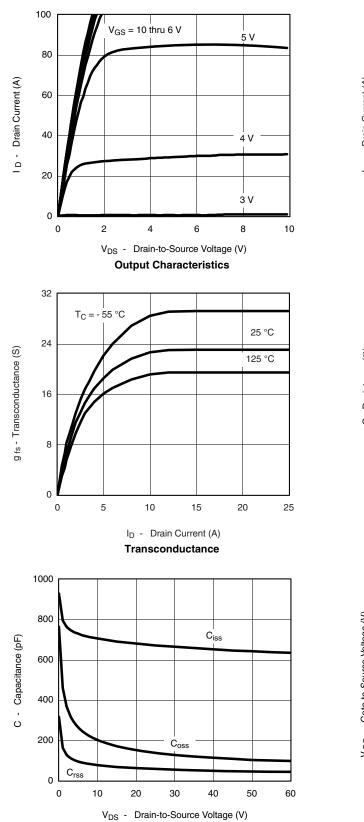
b. Pulse test; pulse width  $\leq$  300 µs, duty cycle  $\leq$  2 %.

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.

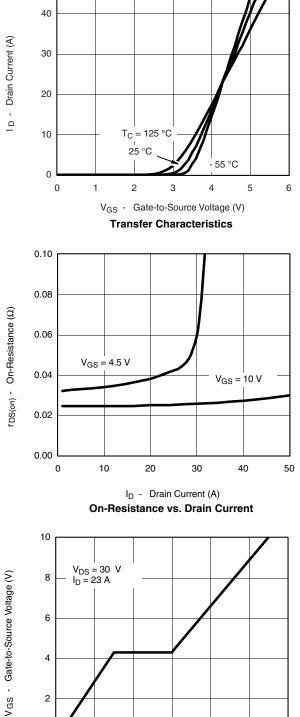


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Capacitance

#### TYPICAL CHARACTERISTICS 25 °C unless noted

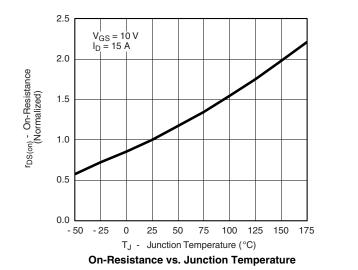


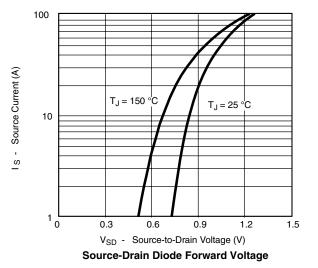
50

0



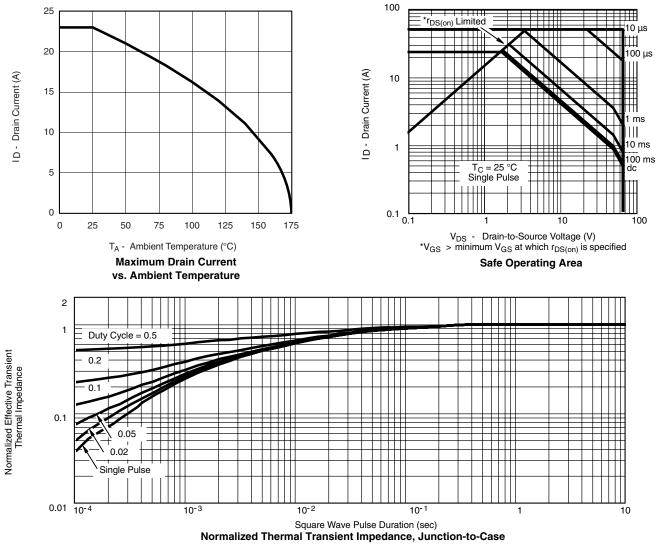
#### TYPICAL CHARACTERISTICS 25 °C unless noted







#### **THERMAL RATINGS**





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