

N-Channel 200 V (D-S) MOSFET

PRODUCT SUMMARY		
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A)
200	0.180 at V _{GS} = 10 V	18
	0.255 at V _{GS} = 4.5 V	10

FEATURES

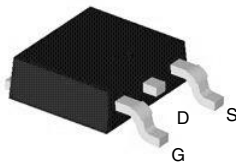
- DT-Trench Power MOSFET
- 100 % Rgand UIS Tested
- 175 °C Junction Temperature



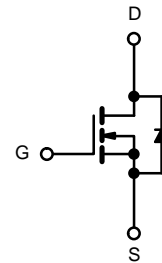
APPLICATIONS

- DC/DC Converters
- DC/AC Inverters
- Motor Drives

TO-252 Pin Configuration



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _C = 25 °C, unless otherwise noted)				
Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	200	V	
Gate-Source Voltage	V _{GS}	± 20		
Continuous Drain Current	I _D	T _C = 25 °C	18	A
		T _C = 70 °C	7.5	
Pulsed Drain Current (t = 300 μs)	I _{DM}	72		
Avalanche Current	I _{AS}	25		
Single Avalanche Energy ^a	E _{AS}	L = 0.1 mH	15.7	mJ
Maximum Power Dissipation ^a	P _D	T _C = 25 °C	85 ^b	W
		T _A = 25 °C ^c	4.1	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 175	°C	

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Limit	Unit
Junction-to-Ambient (PCB Mount) ^c	R _{thJA}	60	°C/W
Junction-to-Case (Drain)	R _{thJC}	1.5	

Notes:

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

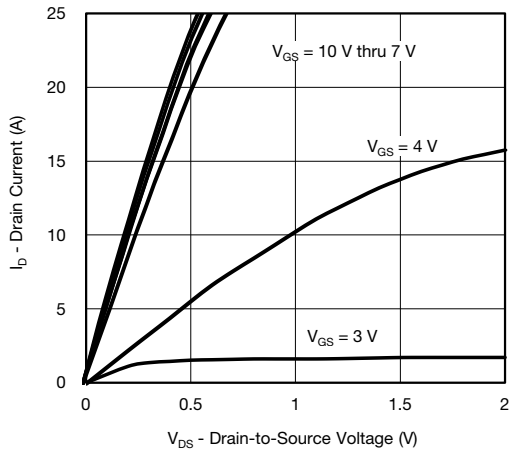
SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	200			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.2		3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 250	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 160\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 160\text{ V}, V_{GS} = 0\text{ V}, T_J = 125\text{ }^\circ\text{C}$			50	
		$V_{DS} = 160\text{ V}, V_{GS} = 0\text{ V}, T_J = 175\text{ }^\circ\text{C}$			250	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 10\text{ V}, V_{GS} = 10\text{ V}$	18			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 8\text{ A}$		0.180	0.220	Ω
		$V_{GS} = 4.5\text{ V}, I_D = 6\text{ A}$		0.255	0.315	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 6\text{ A}$		20		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = 160\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		2260		μF
Output Capacitance	C_{oss}			685		
Reverse Transfer Capacitance	C_{rss}			40		
Total Gate Charge ^c	Q_g	$V_{DS} = 160\text{ V}, V_{GS} = 10\text{ V}, I_D = 8\text{ A}$		19.8	30	nC
Gate-Source Charge ^c	Q_{gs}			3.6		
Gate-Drain Charge ^c	Q_{gd}			4.1		
Gate Resistance	R_g	$f = 1\text{ MHz}$		2		Ω
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 160\text{ V}, R_L = 9.6\text{ }\Omega$ $I_D \cong 8\text{ A}, V_{GEN} = 10\text{ V}, R_g = 1\text{ }\Omega$		8	16	ns
Rise Time ^c	t_r			11	20	
Turn-Off Delay Time ^c	$t_{d(off)}$			18	27	
Fall Time ^c	t_f			5	10	
Drain-Source Body Diode Ratings and Characteristics^b $T_C = 25\text{ }^\circ\text{C}$						
Continuous Current	I_S				18	A
Pulsed Current	I_{SM}				72	
Forward Voltage ^a	V_{SD}	$I_F = 5.2\text{ A}, V_{GS} = 0\text{ V}$		0.7	1.2	V
Reverse Recovery Time	t_{rr}			34	51	ns

Notes:

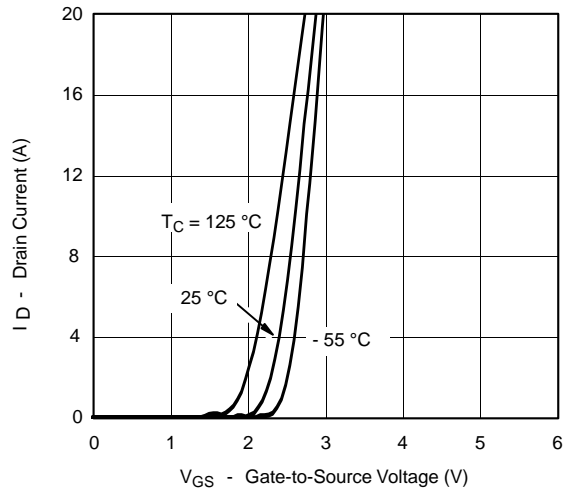
- Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.

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.

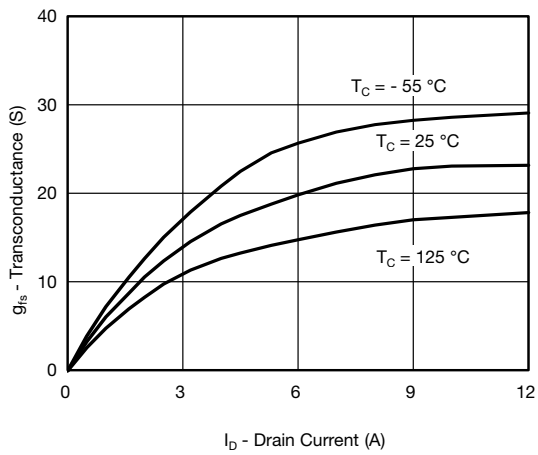
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



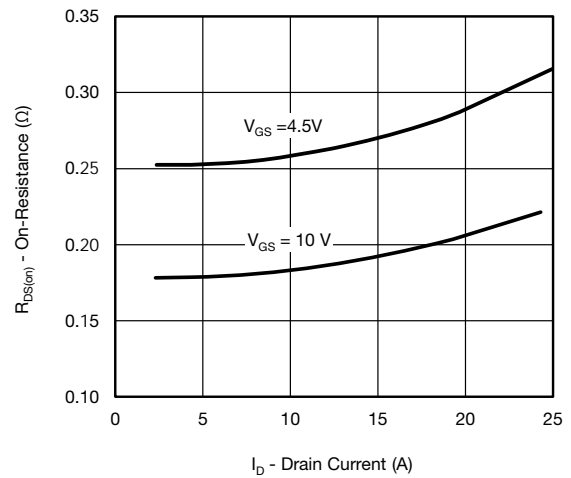
Output Characteristics



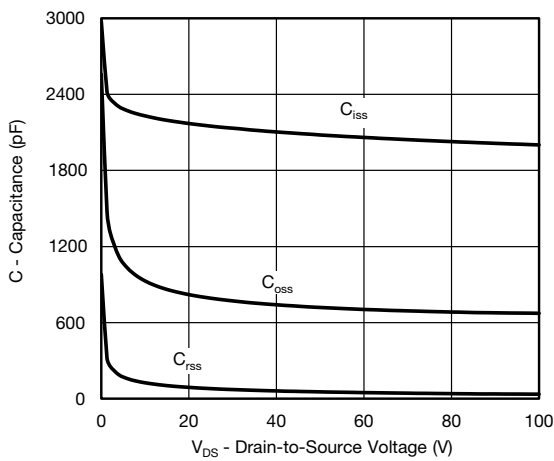
Transfer Characteristics



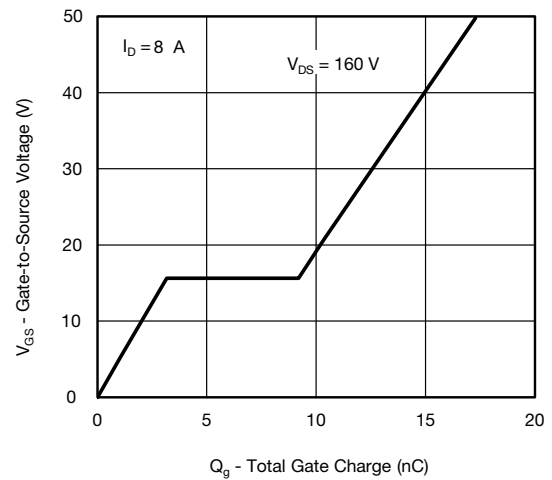
Transconductance



On-Resistance vs. Drain Current

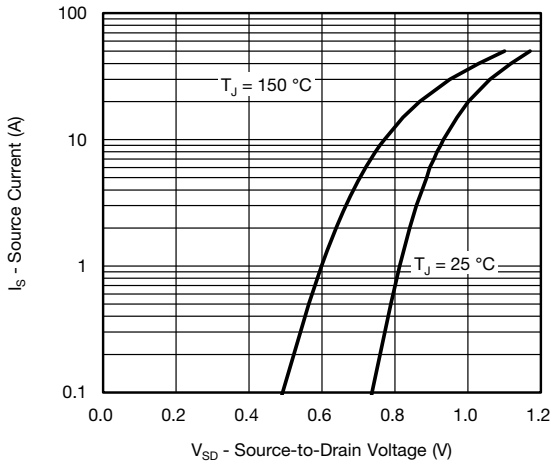


Capacitance

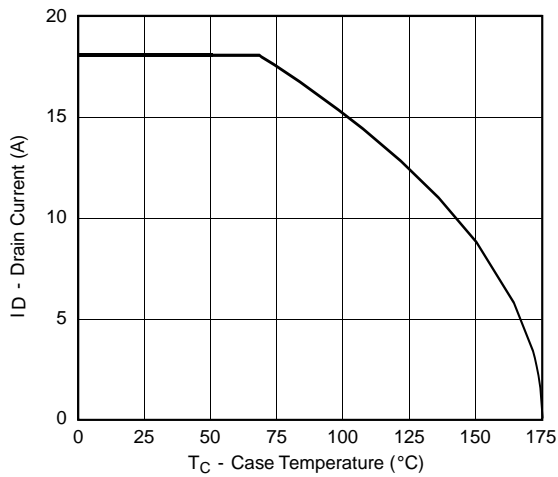


Gate Charge

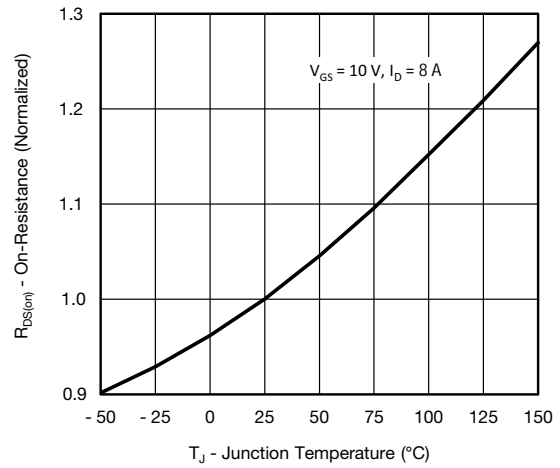
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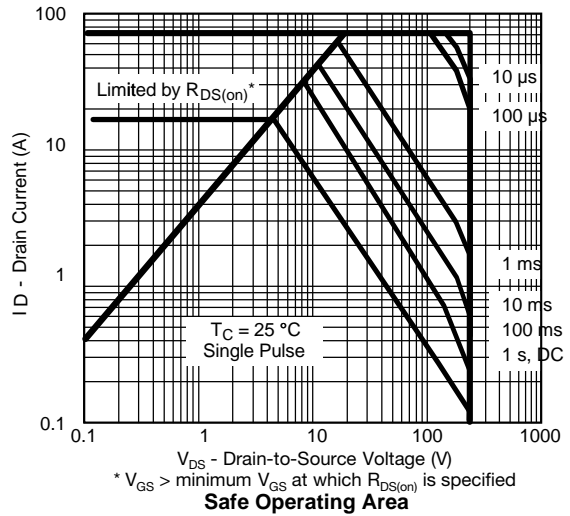
Source-Drain Diode Forward Voltage



Maximum Avalanche Drain Current vs. Case Temperature

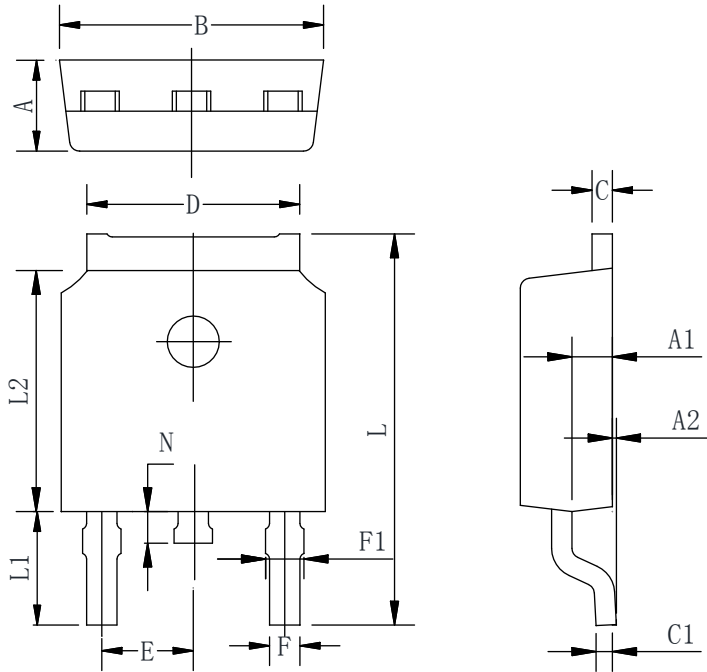


On-Resistance vs. Junction Temperature



Safe Operating Area

TO-252-2L PACKAGE OUTLINE



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

Symbol	Min	Typ	Max
A	2.10	2.30	2.50
A1	0.88	1.01	1.16
A2	0.00	0.15	0.28
B	6.40	6.60	6.80
C	0.42	0.50	0.63
C1	0.42	0.50	0.63
D	5.08	5.32	5.65
E	2.286 TYP		
F	0.63	0.76	0.89
F1	0.64	0.86	1.08
L	9.30	9.90	10.80
L1	2.4	2.8	3.6
L2	5.90	6.10	6.55
N	0.57	0.80	1.05

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