

N-Channel 100-V (D-S) MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
100	0.040 at $V_{GS} = 10$ V	55 ^a

FEATURES

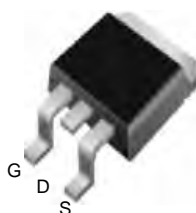
- DT-Trench Power MOSFET
- 175 °C Junction Temperature
- Low Thermal Resistance Package
- 100 % R_g and UIS Tested


RoHS
 COMPLIANT

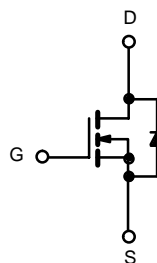
APPLICATIONS

- Isolated DC/DC Converters

D²PAK
(TO-263)



Top View



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 ($T_J = 175$ °C)	I_D	$T_C = 25$ °C	A
		$T_C = 125$ °C	
Pulsed Drain Current	I_{DM}	165	
Avalanche Current	I_{AS}	30	
Single Pulse Avalanche Energy ^b	E_{AS}	50	mJ
Maximum Power Dissipation ^b	P_D	$T_C = 25$ °C	W
		$T_A = 25$ °C ^d	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 175	°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Limit	Unit
Junction-to-Ambient	R_{thJA}	45	°C/W
Junction-to-Case (Drain)	R_{thJC}	0.45	

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).

SPECIFICATIONS T _J = 25 °C, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{DS} = 0 V, I _D = 250 μA	100			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1		4	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80 V , V _{GS} = 0 V			1	μA
		V _{DS} = 80 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 80 V , V _{GS} = 0 V, T _J = 175 °C			250	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	50			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		0.040	0.055	Ω
		V _{GS} = 10 V, I _D = 15 A, T _J = 125 °C		0.065	0.080	
		V _{GS} = 10 V, I _D = 10 A, T _J = 175 °C		0.085	0.120	
Forward Transconductance ^a	g _{fs}	V _{DS} = 80 V, I _D = 20 A		110		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		4980		pF
Output Capacitance	C _{oss}			380		
Reverse Transfer Capacitance	C _{rss}			210		
Total Gate Charge ^c	Q _g	V _{DS} = 80 V, V _{GS} = 10 V, I _D = 20 A		93		nC
Gate-Source Charge ^c	Q _{gs}			21		
Gate-Drain Charge ^c	Q _{gd}			37		
Gate Resistance	R _g			1.8		Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 80 V, R _L = 1.5 Ω I _D ≅ 20 A, V _{GEN} = 10 V, R _g = 2.5 Ω		24	35	ns
Rise Time ^c	t _r			220	330	
Turn-Off Delay Time ^c	t _{d(off)}			45	70	
Fall Time ^c	t _f			200	300	
Source-Drain Diode Ratings and Characteristics T _C = 25 °C ^b						
Continuous Current	I _S				55	A
Pulsed Current	I _{SM}				165	
Forward Voltage ^a	V _{SD}	I _F = 20 A, V _{GS} = 0 V		1.0	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 20 A, di/dt = 100 A/μs		110	180	ns
Peak Reverse Recovery Current	I _{RM(REC)}			7	11	A
Reverse Recovery Charge	Q _{rr}				0.49	1.0

Notes:

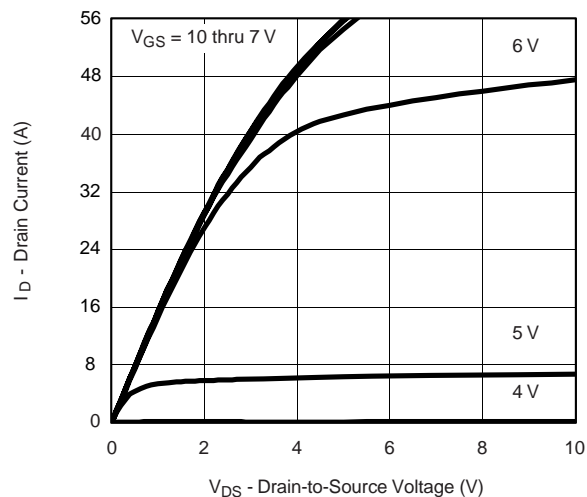
 a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

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

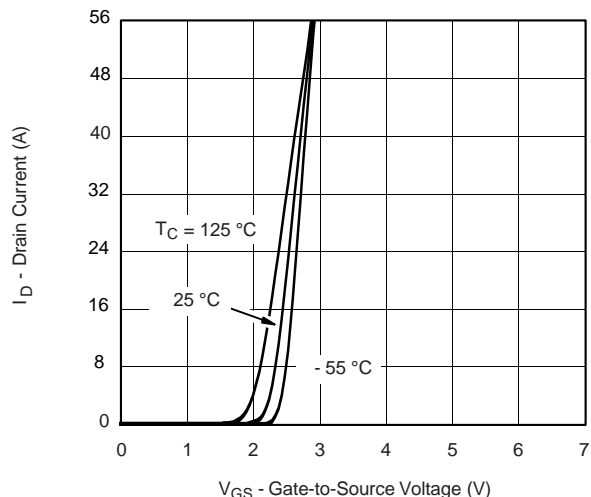
c. Independent of operating temperature.

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.

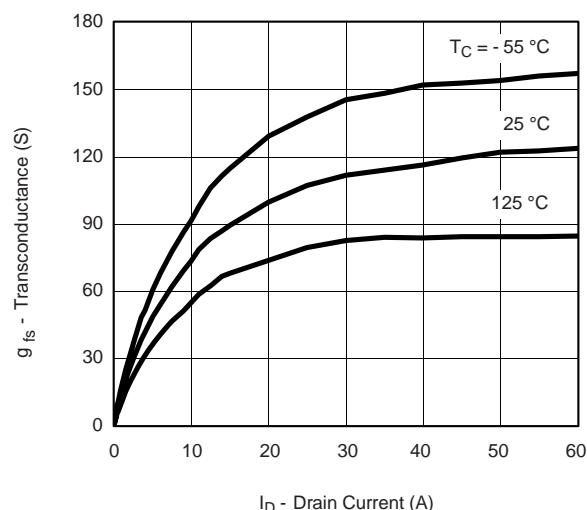
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



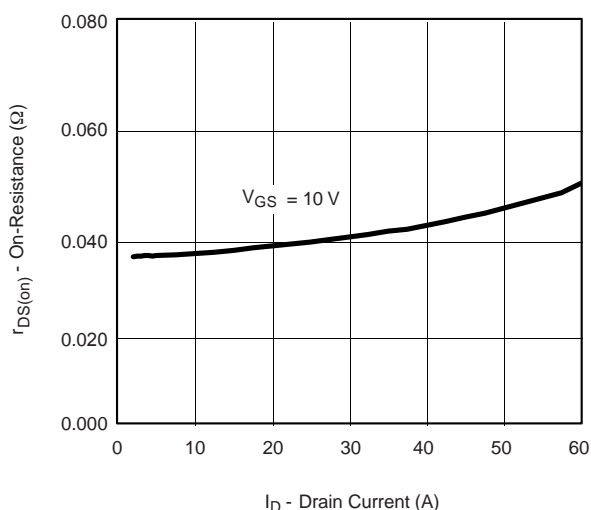
Output Characteristics



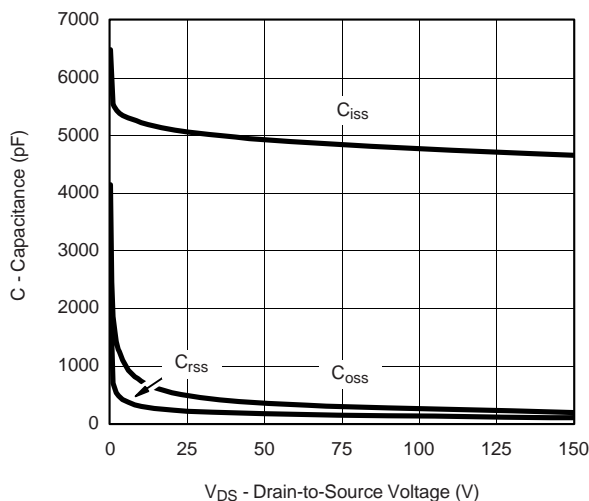
Transfer Characteristics



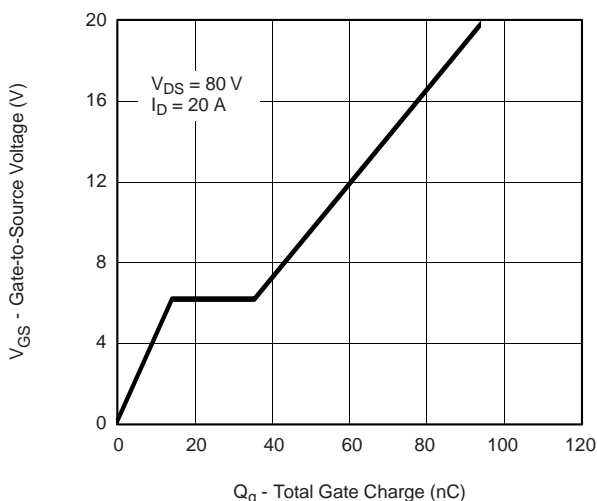
Transconductance



On-Resistance vs. Drain Current

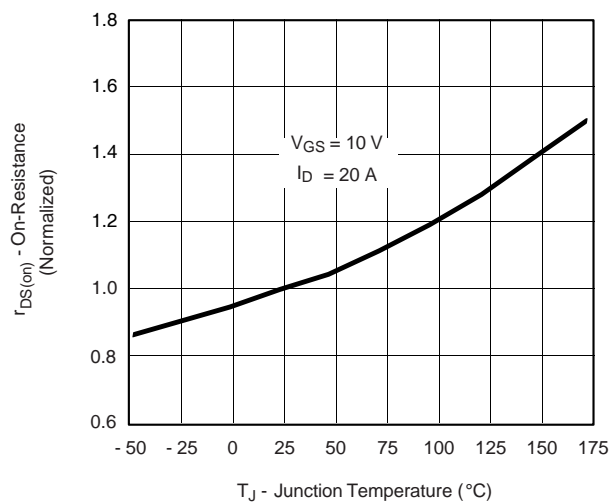


Capacitance

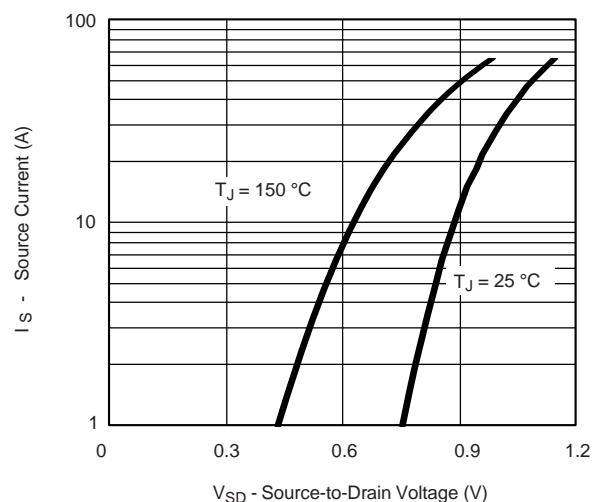


Gate Charge

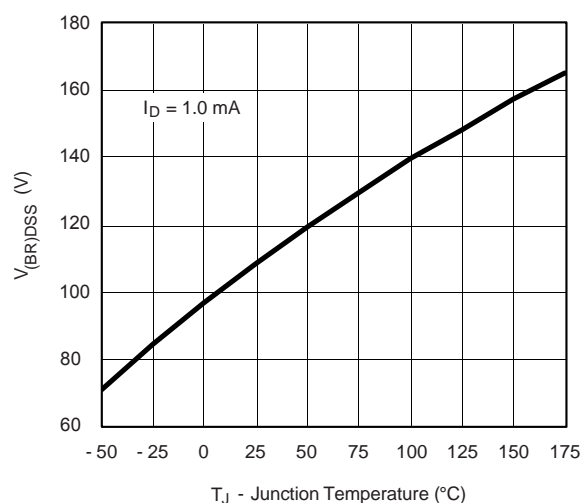
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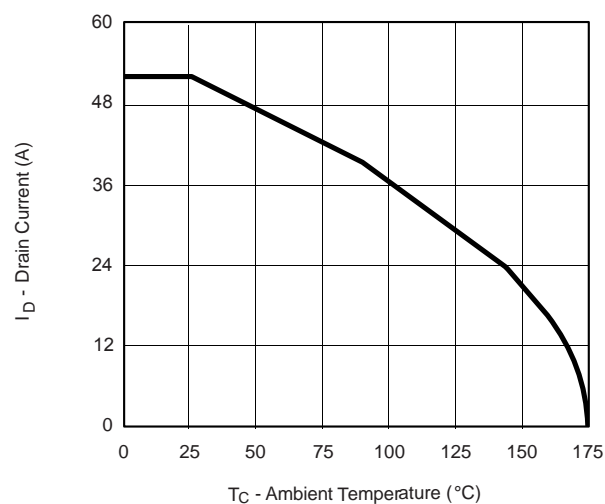
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

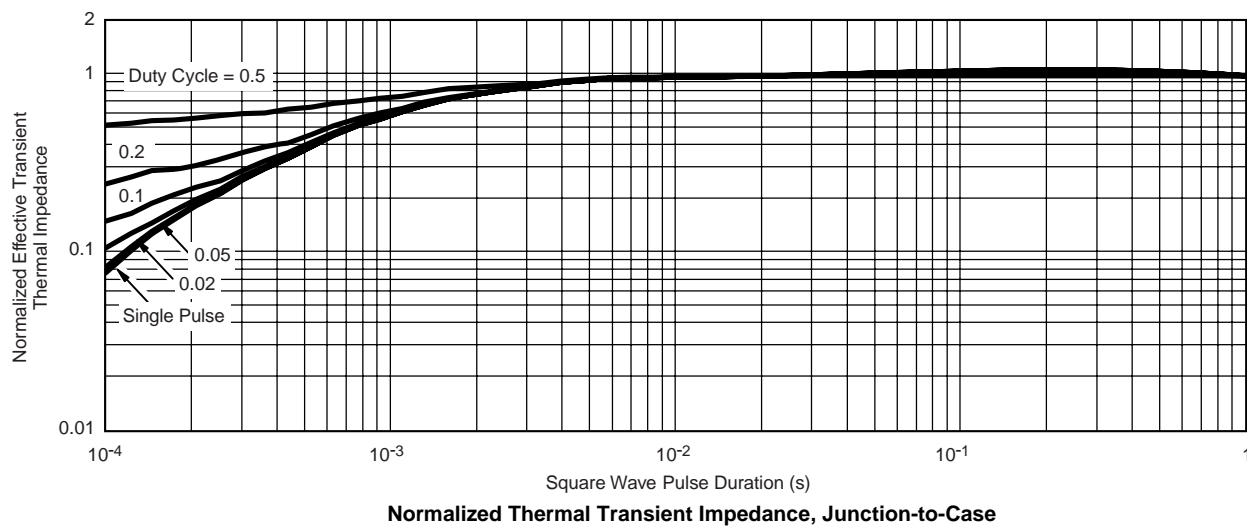
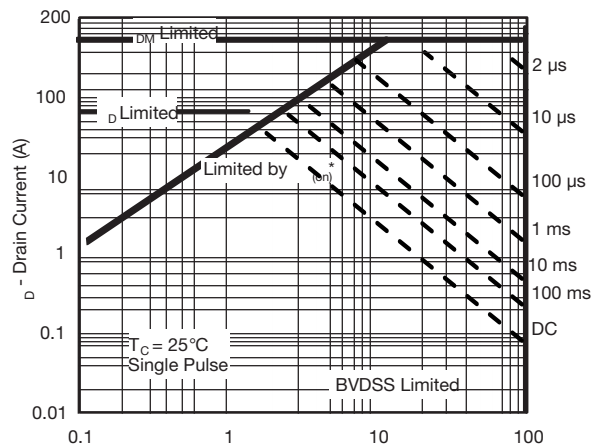


Drain Source Breakdown vs. Junction Temperature



Maximum Avalanche and Drain Current vs. Case Temperature

THERMAL RATINGS



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