

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

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (m Ω)(Typ.)	I_D (A)(Max.)
100	8.2 at $V_{GS} = 10$ V	100 ^a

FEATURES

- DT-Trench II Power MOSFET
- 100 % Rg and UIS tested
- Fast switching

APPLICATIONS

- Load Switch
- LED applications
- Networking

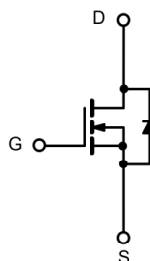


RoHS
COMPLIANT

TO-263 Pin Configuration



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS $T_C = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$ 100 ^a	A
		$T_C = 100^\circ\text{C}$ 48 ^a	
Pulsed Drain Current	I_{DM}	300	
Avalanche Current ^b	I_{AR}	55	
Repetitive Avalanche Energy ^b	E_{AR}	115	mJ
Maximum Power Dissipation ^b	P_D	$T_C = 25^\circ\text{C}$ 138 ^c	W
		$T_A = 25^\circ\text{C}$ 2.05	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Limit	Unit
Junction-to-Ambient	R_{thJA}	60	$^\circ\text{C/W}$
Junction-to-Case (Drain)	R_{thJC}	1.5	

Notes:

a. Package limited.

b. Duty cycle $\leq 1\%$.

c. See SOA curve for voltage derating.

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

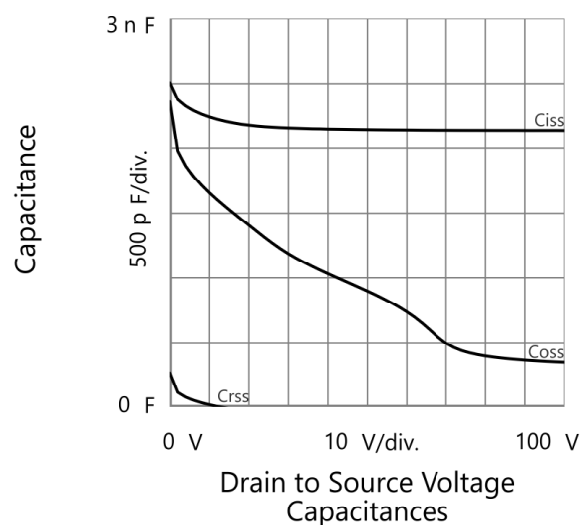
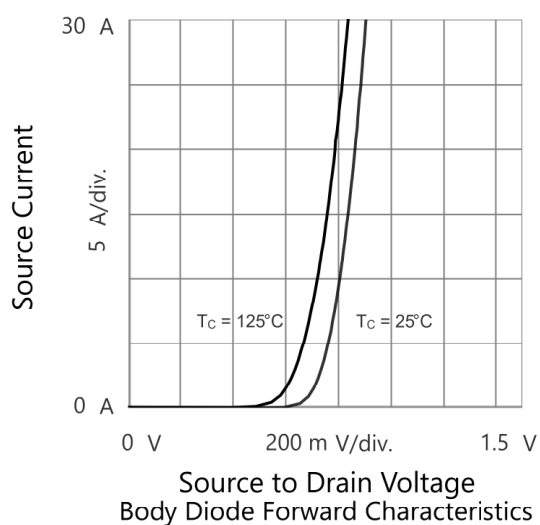
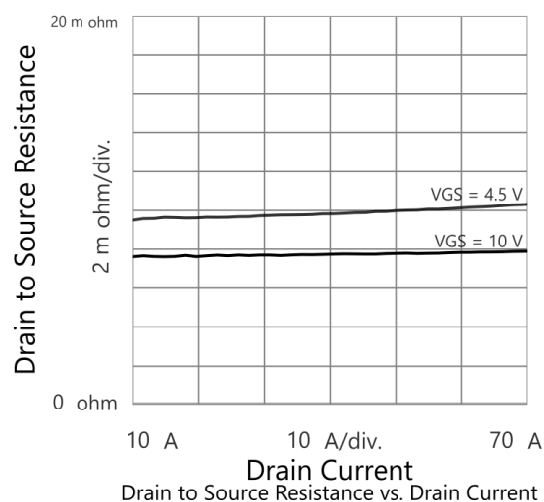
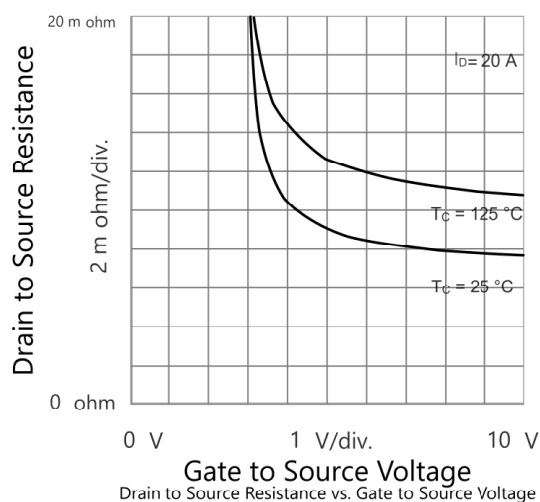
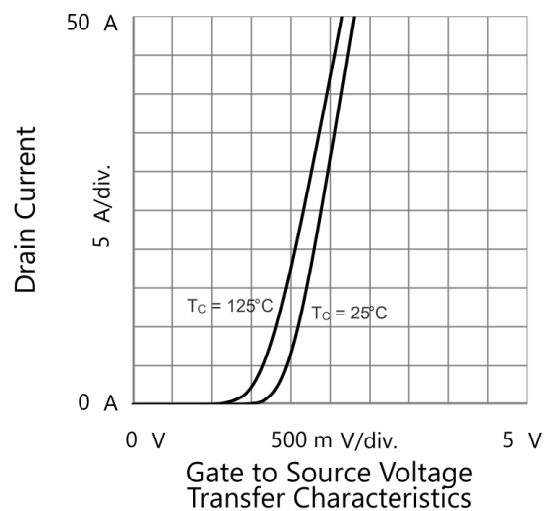
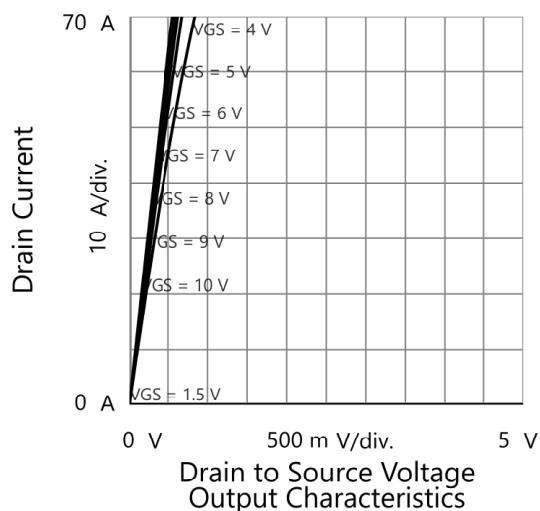
SPECIFICATIONS $T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{DS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	100			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1		3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}, T_J = 85\text{ }^{\circ}\text{C}$			10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$	100			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 20\text{ A}$		8.2	10	m Ω
		$V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$		9.5	13	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 20\text{ A}$		65		S
Dynamic ^b						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V}, f = 1\text{ MHz}$		2158		pF
Output Capacitance	C_{oss}			897		
Reverse Transfer Capacitance	C_{rss}			22		
Total Gate Charge ^c	Q_g	$V_{DS} = 50\text{ V}, V_{GS} = 10\text{ V}, I_D = 20\text{ A}$		32		nC
Gate-Source Charge ^c	Q_{gs}			3.7		
Gate-Drain Charge ^c	Q_{gd}			1.2		
Gate Resistance	R_g			3.5		Ω
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 50\text{ V}, R_L = 0.6\text{ }\Omega$ $I_D = 20\text{ A}, V_{GEN} = 10\text{ V}, R_g = 2.5\text{ }\Omega$		12		ns
Rise Time ^c	t_r			8		
Turn-Off Delay Time ^c	$t_{d(off)}$			25		
Fall Time ^c	t_f			5		
Source-Drain Diode Ratings and Characteristics $T_C = 25\text{ }^{\circ}\text{C}$ ^b						
Continuous Current	I_S				100	A
Pulsed Current	I_{SM}				300	
Forward Voltage ^a	V_{SD}	$I_F = 1\text{ A}, V_{GS} = 0\text{ V}$		0.6	1.0	V
Reverse Recovery Time	t_{rr}	$I_F = 20\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}$		30		ns
Reverse Recovery Charge	Q_{rr}			190		nC

Notes:

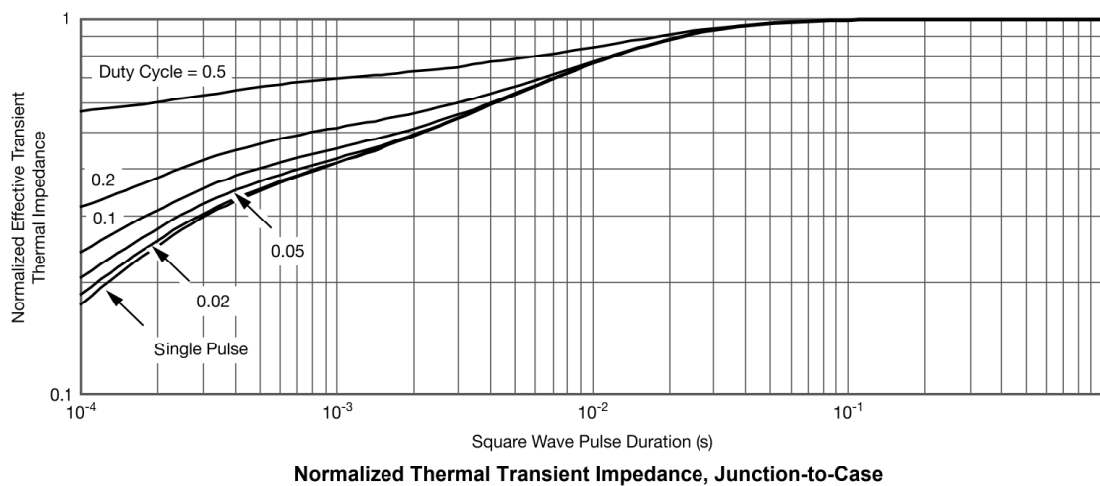
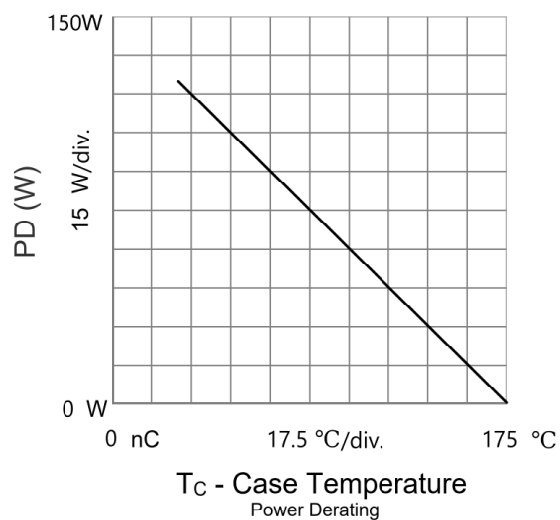
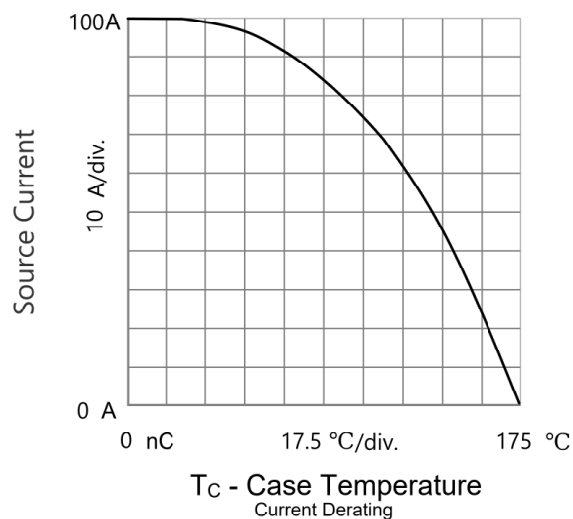
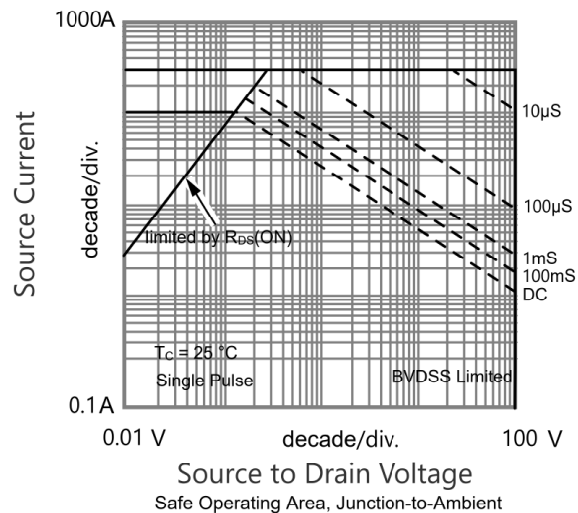
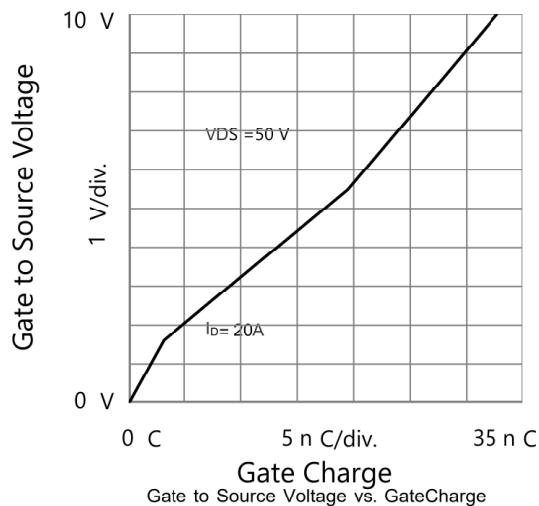
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
 b. Guaranteed by design, not subject to production testing.
 c. Independent of operating temperature.

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



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