

P-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY

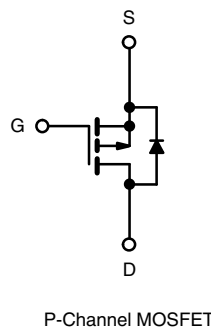
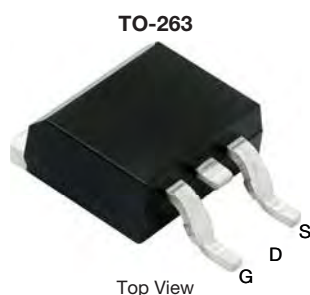
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ.)
- 100	0.082 at $V_{GS} = - 10$ V	- 30	70 nC
	0.092 at $V_{GS} = - 4.5$ V	- 25	

FEATURES

- Maximum 175 °C junction temperature
- 100 % R_g and UIS tested
- DT-TrenchPower MOSFET



RoHS
COMPLIANT
HALOGEN
FREE



ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	- 100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 150$ °C) ^b	$T_C = 25$ °C	I_D	- 30	A
	$T_C = 70$ °C		- 26	
	$T_A = 25$ °C		- 10 ^{b, c}	
	$T_A = 70$ °C		- 6.5 ^{b, c}	
Pulsed Drain Current		I_{DM}	- 120	
Continuous Source Current (Diode Conduction)	$T_C = 25$ °C	I_S	- 30 ^a	
	$T_A = 25$ °C		- 5.15 ^{b, c}	
Avalanche Current	L = 0.1 mH	I_{AS}	- 28	mJ
Single Pulse Avalanche Energy		E_{AS}	415	
Maximum Power Dissipation	$T_C = 25$ °C	P_D	215	W
	$T_C = 70$ °C		159	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 175	°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient ^a	$t \leq 10$ s	R_{thJA}	18	22	°C/W
	Steady State		45	50	
Junction-to-Case (Drain)		R_{thJC}	0.59	1.2	

Notes:

a. Package limited.

b. Surface mounted on 1" x 1" FR4 board.

c. $t = 10$ s.

d. Maximum under steady state conditions is 50 °C/W.

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 V, I _D = - 250 μA	- 100			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = - 250 μA		- 109		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			5.9		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = - 250 μA	- 1.5		- 3.5	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = - 100 V, V _{GS} = 0 V			- 1	μA
		V _{DS} = - 80 V, V _{GS} = 0 V, T _J = 55 °C			- 10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = - 10 V	- 30			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 10 V, I _D = - 10 A		0.082	0.099	Ω
		V _{GS} = - 4.5 V, I _D = - 8 A		0.092	0.115	
Forward Transconductance ^a	g _{fs}	V _{DS} = - 15 V, I _D = - 10 A		16		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{DS} = - 50 V, V _{GS} = 0 V, f = 1 MHz		5260		pF
Output Capacitance	C _{oss}			710		
Reverse Transfer Capacitance	C _{rss}			79		
Total Gate Charge	Q _g	V _{DS} = - 50 V, V _{GS} = - 10 V, I _D = - 10 A		70	100	nC
		V _{DS} = - 50 V, V _{GS} = - 4.5 V, I _D = - 8 A		33	50	
Gate-Source Charge	Q _{gs}			15		
Gate-Drain Charge	Q _{gd}			23		
Gate Resistance	R _g	f = 1 MHz		5		Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = - 50 V, R _L = 6.5 Ω I _D ≅ - 10 A, V _{GEN} = - 10 V, R _g = 1 Ω		26		ns
Rise Time	t _r			70		
Turn-Off Delay Time	t _{d(off)}			45		
Fall Time	t _f			39		
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			- 30	A
Pulse Diode Forward Current ^a	I _{SM}				- 120	
Body Diode Voltage	V _{SD}	I _S = - 10 A		- 0.8	- 1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = - 10 A, dI/dt = 100 A/μs, T _J = 25 °C		60	90	ns
Body Diode Reverse Recovery Charge	Q _{rr}			150	215	nC
Reverse Recovery Fall Time	t _a			48		ns
Reverse Recovery Rise Time	t _b			15		

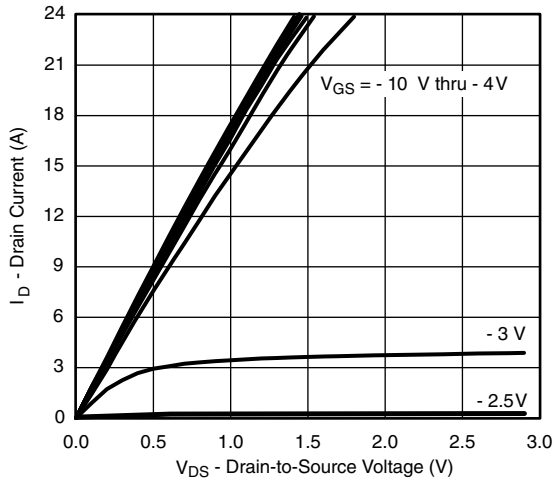
Notes:

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

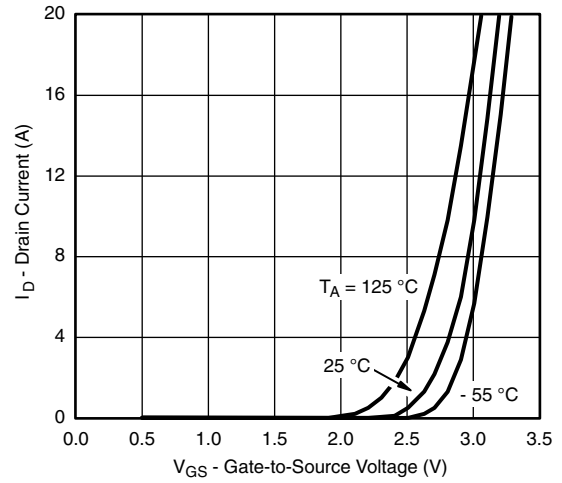
b. Guaranteed by design, not subject to production testing.

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.

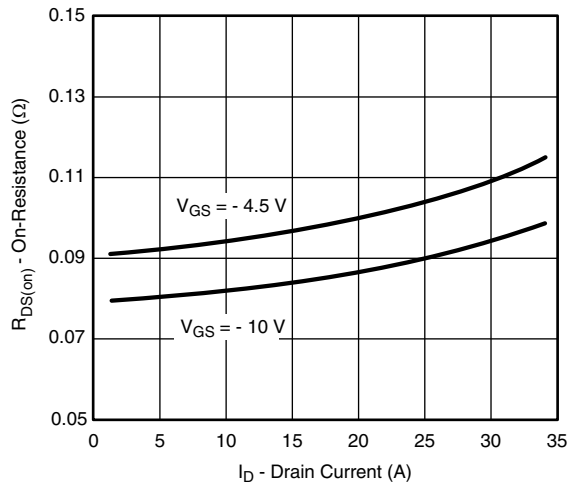
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



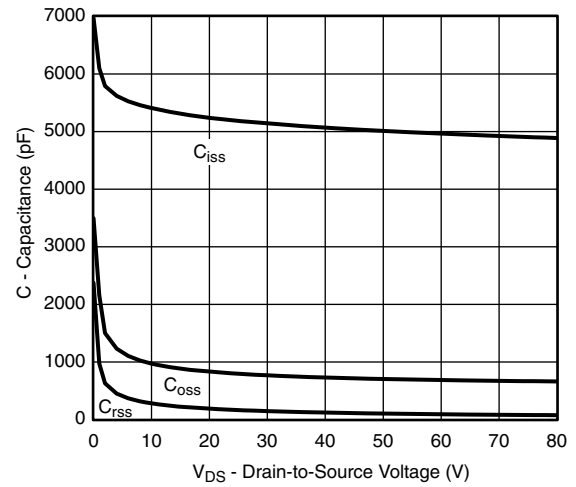
Output Characteristics



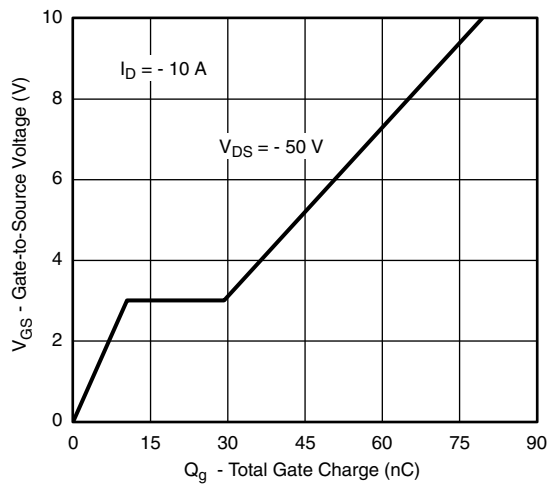
Transfer Characteristics



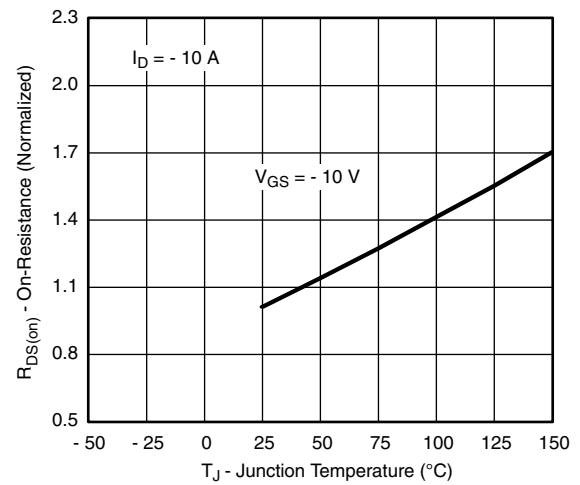
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

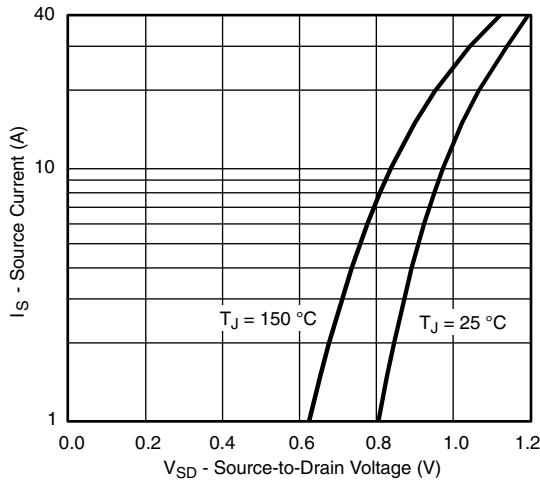


Gate Charge

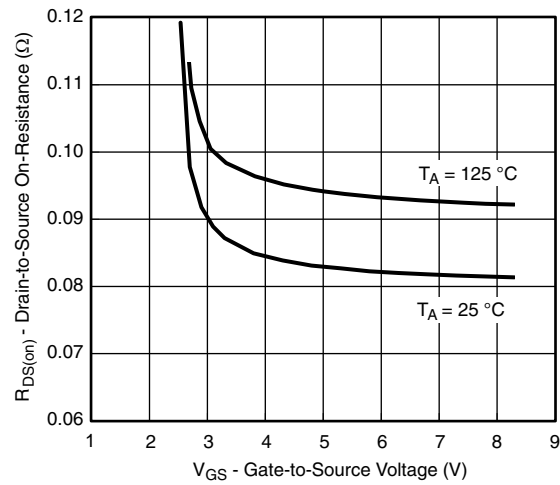


On-Resistance vs. Junction Temperature

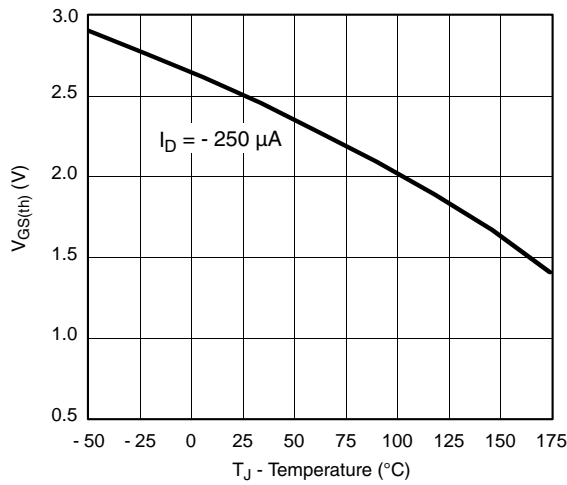
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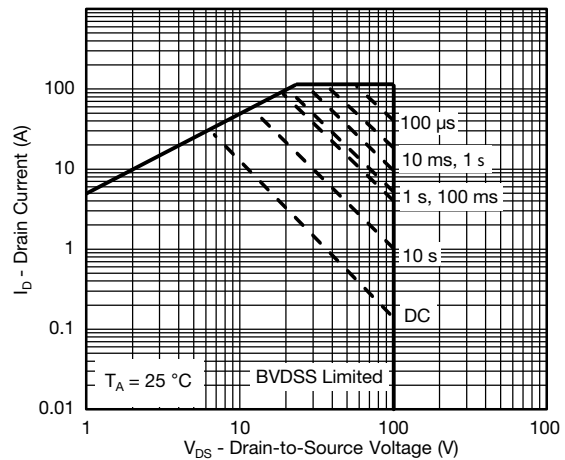
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

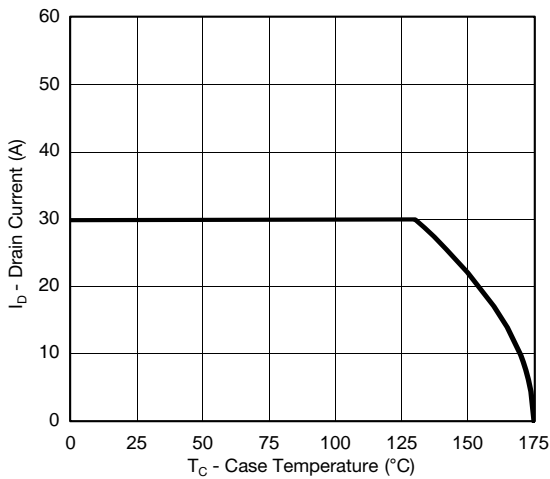


Threshold Voltage

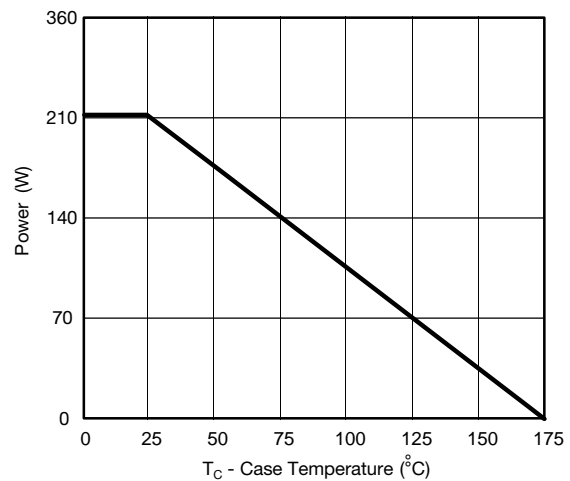


* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient

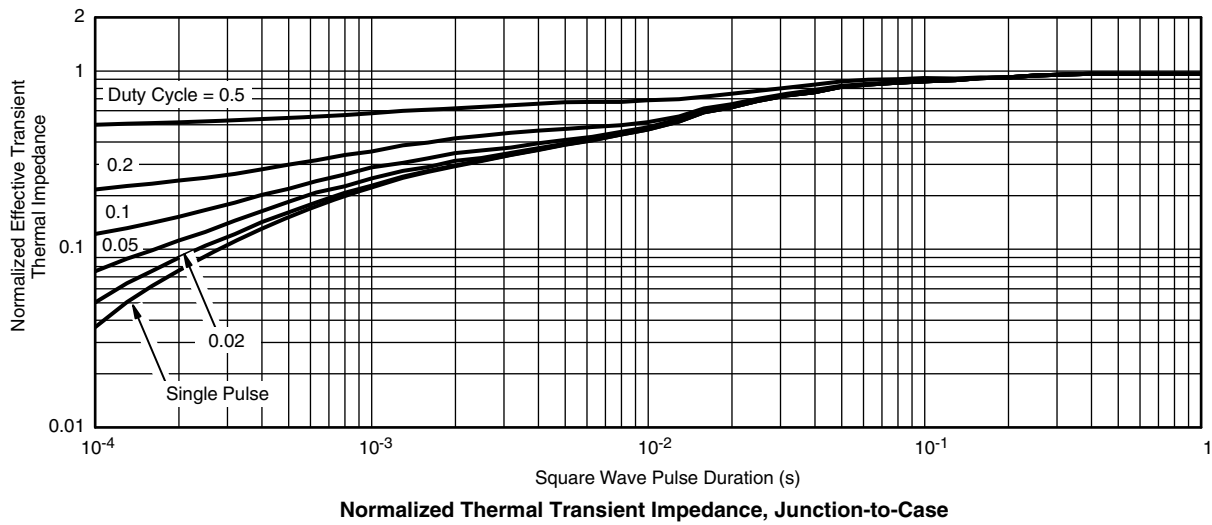
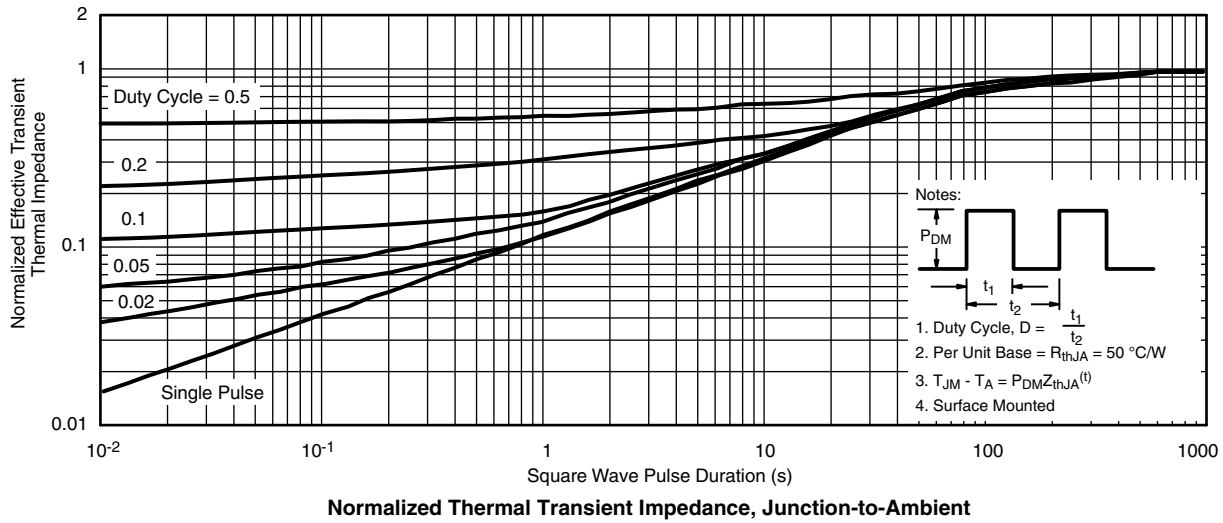


Current Derating*



Single Pulse Power, Junction-to-Ambient

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



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