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

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (mΩ) (Typ.)	I_D (A)	Q_g (Typ.)
- 100	185 at V_{GS} = - 10 V	- 3.8	7.9 nC
	212 at V_{GS} = - 4.5 V	- 3.0	

FEATURES

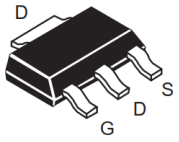
- DT-Trench Power MOSFET
- 100 % Rg and UIS tested
- Ultra Low On-Resistance

Pb-free
RoHS COMPLIANT

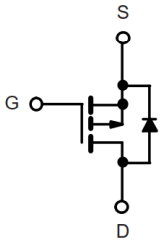
APPLICATIONS

- Active Clamp Circuits in DC/DC Power Supplies

SOT-223



Top View



P-Channel MOSFET

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)[a, b]	T_A = 25 °C	I_D	- 3.8	A
	T_A = 70 °C		- 2.5	
Pulsed Drain Current		I_{DM}	- 11	
Continuous Source Current (Diode Conduction)[a, b]		I_S	- 3.8	
Single Pulse Avalanche Current	L = 1.0 mH	I_{AS}	3.5	
Single Pulse Avalanche Energy		E_{AS}	13	mJ
Maximum Power Dissipation	T_C = 25 °C	P_D	2.7	W
	T_C = 70 °C		1.7	
	T_A = 25 °C		1.55	
	T_A = 70 °C		0.93	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS					
Parameter		**Symbol**	**Typical**	**Maximum**	**Unit**
Maximum Junction-to-Ambient[a]	t ≤ 5 s	R_{thJA}	65	80.5	°C/W
Maximum Junction-to-Case	Steady State	R_{thJC}	30	45	

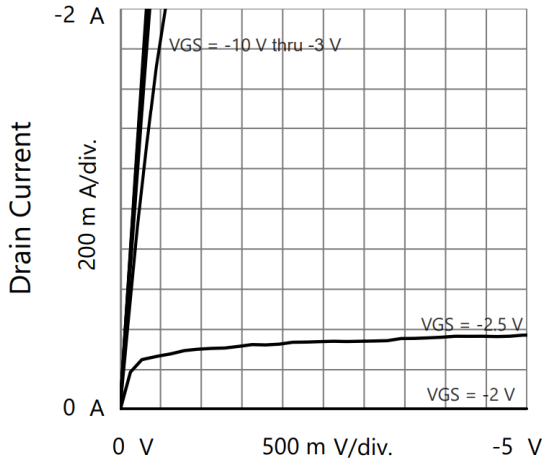
Notes:
a. Surface Mounted on 1" x 1" FR4 board.
b. Pulse width limited by maximum junction temperature.

SPECIFICATIONS (T_J = 25 °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
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 µA	- 1.2		- 2.5	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} =-100V, V_{GS} = 0 V			- 1	µA
		V_{DS} = -80V, V_{GS} = 0 V, T_J = 55 °C			- 10	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≤ -15 V, V_{GS} = -10 V	- 3.8			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = -10 V, I_D = -0.5 A		185	240	mΩ
		V_{GS} = -4.5 V, I_D = -0.5 A		212	290	
Forward Transconductance[a]	g_{fs}	V_{DS} = -25 V, I_D = -0.5 A		2.2		S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{DS}= -25 V, V_{GS} = 0 V, f = 1 MHz		1250		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			34		
Total Gate Charge	Q_g	V_{DS} = -50 V, V_{GS} = -10 V, I_D = -0.5 A		7.9		nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			2.5		
Gate Resistance	R_g	f = 1 MHz		10		Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -50 V, I_D = -0.5 A, V_{GEN} = -10 V, R_g = 6 Ω		8		ns
Rise Time	t_r			11		
Turn-Off Delay Time	$t_{d(off)}$			16		
Fall Time	t_f			11		
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_A = 25 °C			-3.8	A
Pulse Diode Forward Current[a]	I_{SM}				-11	
Body Diode Voltage	V_{SD}	I_S = -1 A			-1.2	V
Body Diode Reverse Recovery Charge	Q_{rr}	I_F = -0.5 A, di/dt = 100 A/µs, T_J = 25 °C		90		nC

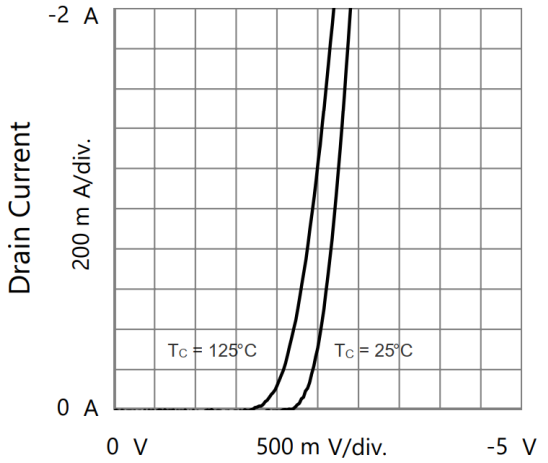
Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

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.

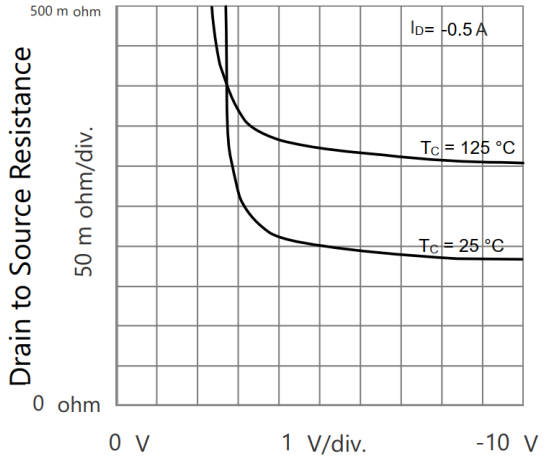
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



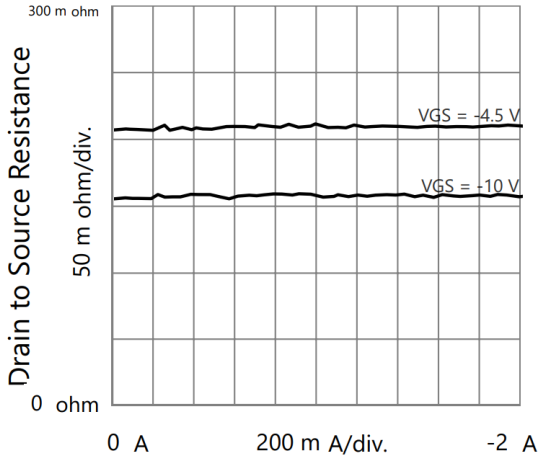
Drain to Source Voltage
Output Characteristics



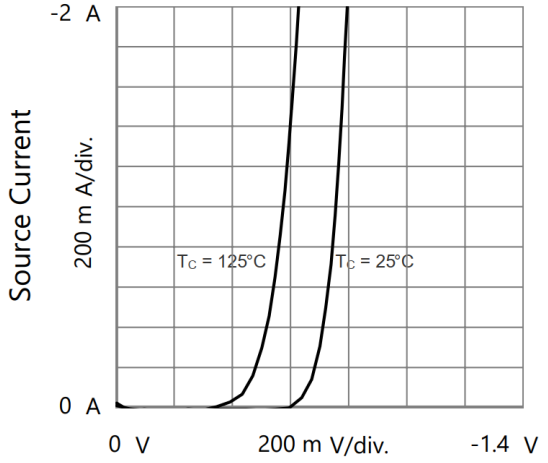
Gate to Source Voltage
Transfer Characteristics



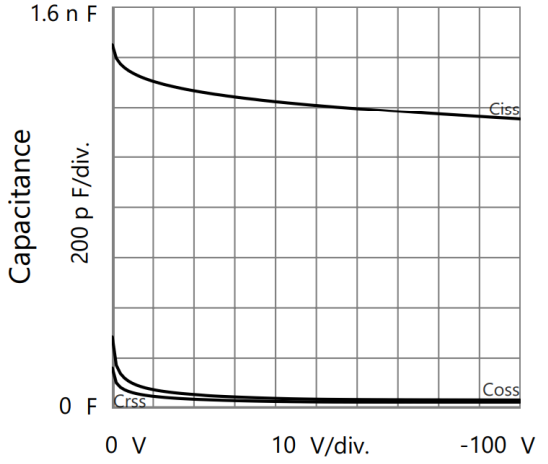
Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltage



Drain Current
Drain to Source Resistance vs. Drain Current

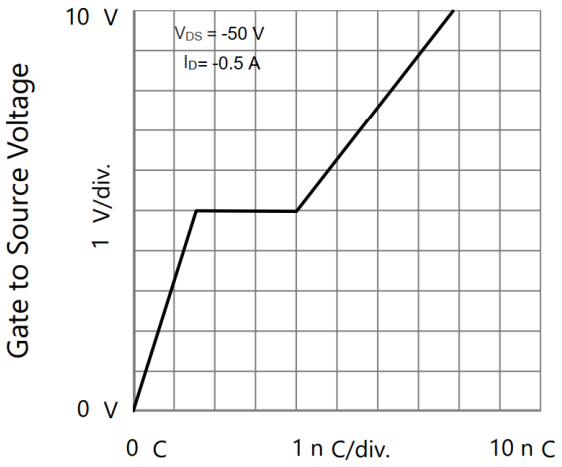


Source to Drain Voltage
Body Diode Forward Characteristics

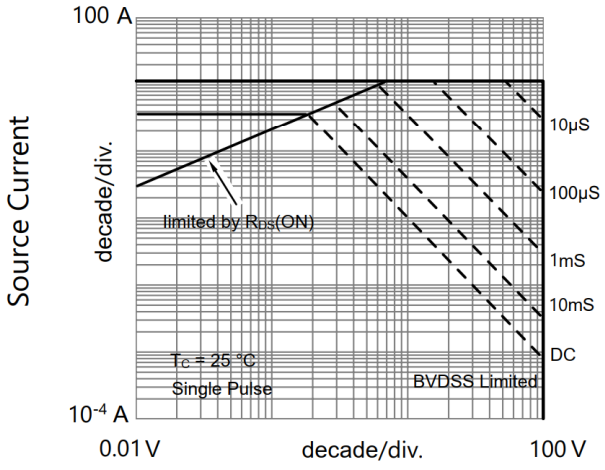


Drain to Source Voltage
Capacitances

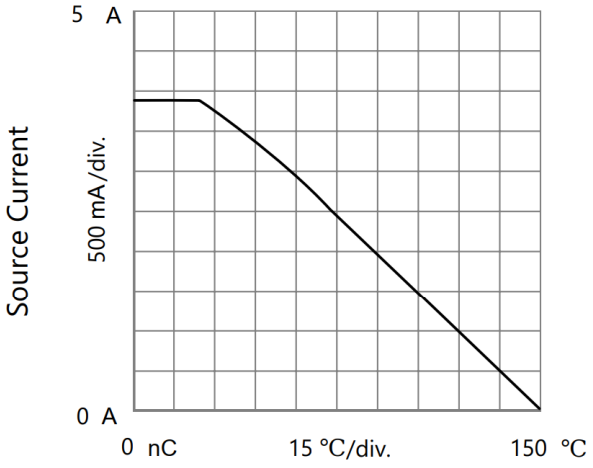
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



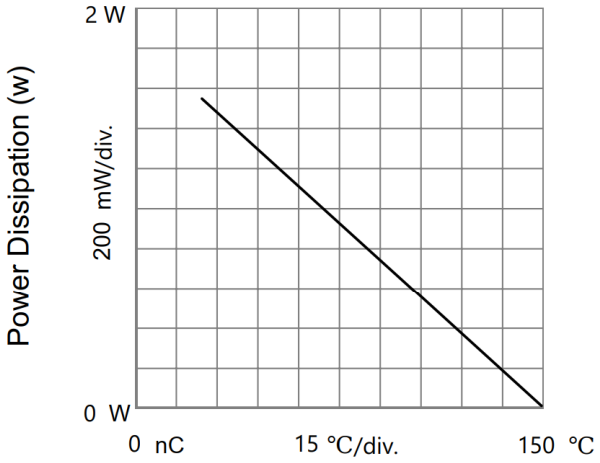
Gate to Source Voltage vs. GateCharge



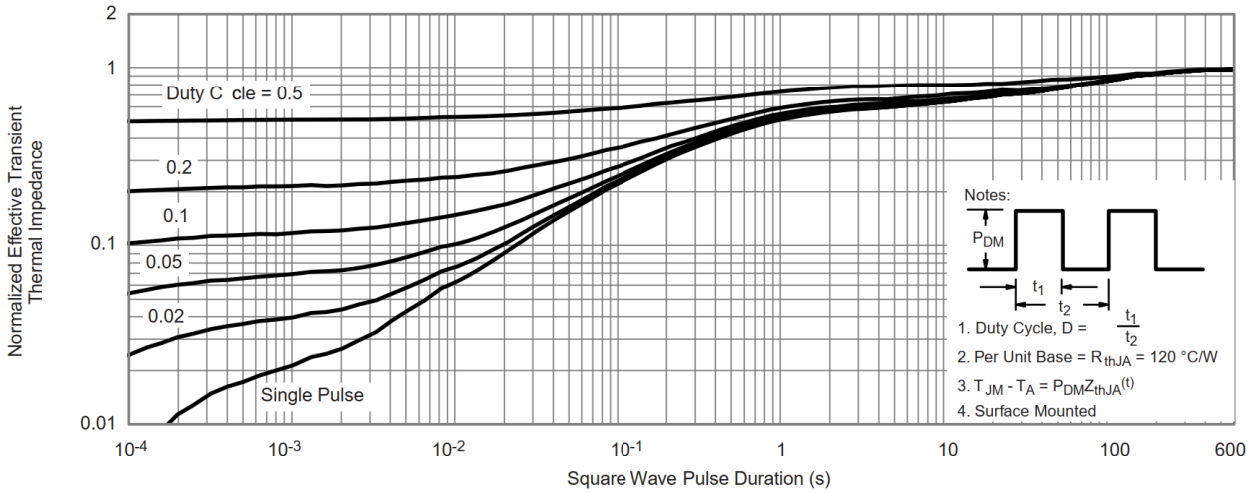
Safe Operating Area, Junction-to-Ambient



Current Derating

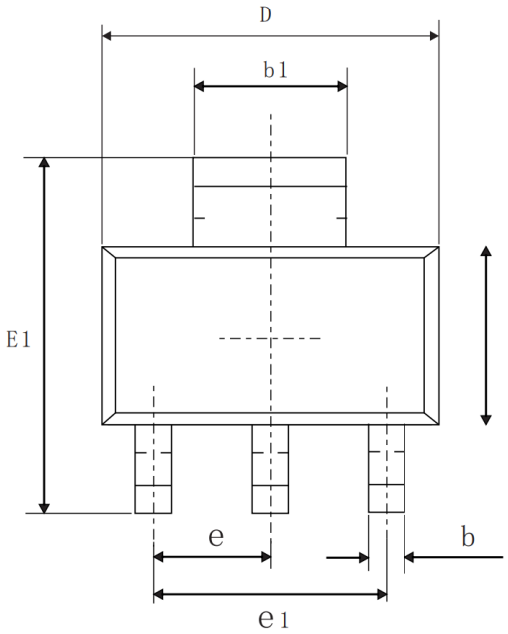


Current Derating

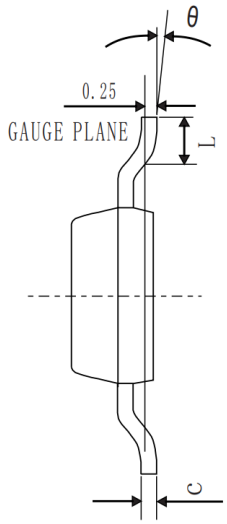


Normalized Thermal Transient Impedance, Junction-to-Ambient

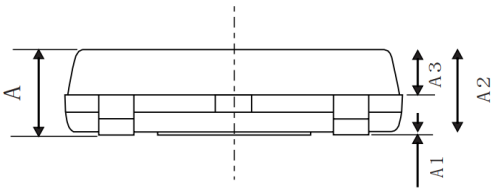
SOT-223-3L PACKAGE OUTLINE



TOP VIEW



SIDE VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	-	-	1.95
A1	0.00	0.05	0.16
A2	1.35	1.60	1.85
A3	0.65	0.90	1.15
b	0.55	0.70	0.90
b1	2.75	3.00	3.30
C	0.18	0.30	0.42
D	6.00	6.50	7.00
E	3.10	3.50	3.90
E1	6.50	7.00	7.50
e1	4.20	4.60	5.00
L	0.78	-	1.28
θ	0°	5°	10°
e	2.3BSC		

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