

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

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (m Ω) (Typ.)	I_D (A)	Q_g (Typ.)
- 100	180 at $V_{GS} = - 10$ V	- 3	7.9
	200 at $V_{GS} = - 4.5$ V	-2.8	

FEATURES

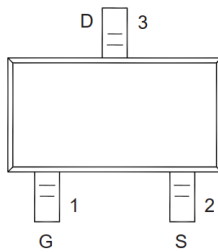
- DT-Trench Power MOSFET
- Ultra Low On-Resistance
- 100 % R_g Tested
- 100 % UIS Tested


RoHS
 COMPLIANT

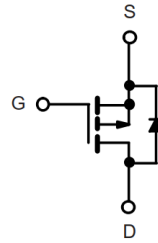
APPLICATIONS

- Active Clamp Circuits in DC/DC Power Supplies

(SOT-23-3L)



Top View



P-Channel MOSFET

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

Parameter		Symbol	5 s	Steady State	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	- 3	A
	T _A = 70 °C		- 2.5	- 2.8	
Pulsed Drain Current		I _{DM}	- 10.6		
Continuous Source Current (Diode Conduction) ^{a, b}		I _S	- 3.8	- 3	
Single Pulse Avalanche Current	L = 1.0 mH	I _{AS}	4.5		mJ
Single Pulse Avalanche Energy		E _{AS}	1.01		
Maximum Power Dissipation ^{a, b}	T _A = 25 °C	P _D	1.25	0.75	W
	T _A = 70 °C		0.8	0.48	
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	R_{thJA}	75	100	°C/W
		120	166	
Maximum Junction-to-Foot (Drain)	R_{thJF}	40	50	

Notes:

a. Surface Mounted on 1" x 1" FR4 board.

b. Pulse width limited by maximum junction temperature.

SPECIFICATIONS $T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$	-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
		$V_{DS} = -80\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^{\circ}\text{C}$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \leq -15\text{ V}, V_{GS} = 10\text{ V}$	-3			A
Drain-Source On-Resistance ^a	$R_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -0.5\text{ A}$		180		m Ω
		$V_{GS} = -4.5\text{ V}, I_D = -0.5\text{ A}$		200		
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15\text{ V}, I_D = -0.5\text{ A}$		2.2		S
Diode Forward Voltage	V_{SD}	$I_S = -1.0\text{ A}, V_{GS} = 0\text{ V}$		0.7	-1.2	V
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS} = -50\text{ V}, V_{GS} = 10\text{ V},$ $I_D \cong -0.5\text{ A}$		7.7		nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			2.5		
Gate Resistance	R_g	$f = 1.0\text{ MHz}$		14		Ω
Input Capacitance	C_{iss}	$V_{DS} = -50\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		1270		pF
Output Capacitance	C_{oss}			48		
Reverse Transfer Capacitance	C_{rss}			34		
Switching ^c						
Turn-On Time	$t_{d(on)}$	$V_{DD} = -50\text{ V}, R_L = 75\text{ }\Omega$ $I_D \cong -1.0\text{ A}, V_{GEN} = -10\text{ V}$ $R_g = 6\text{ }\Omega$		7		ns
	t_r			11		
Turn-Off Time	$t_{d(off)}$			16		
	t_f			11		
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F = 0.5\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}$		90		nC

Notes:

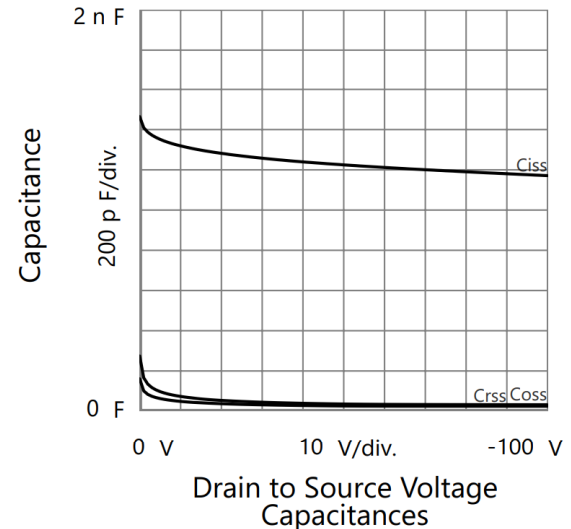
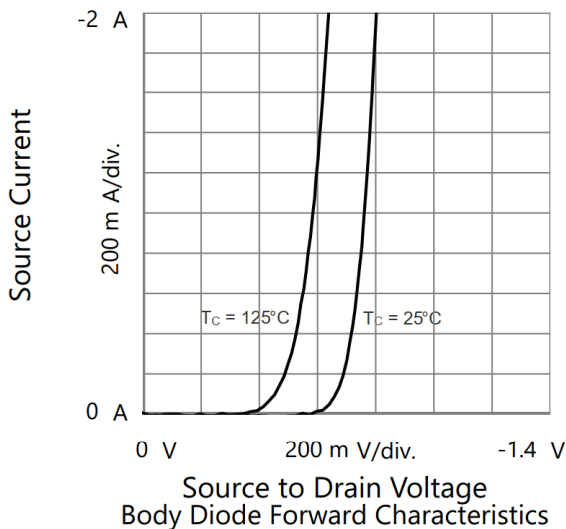
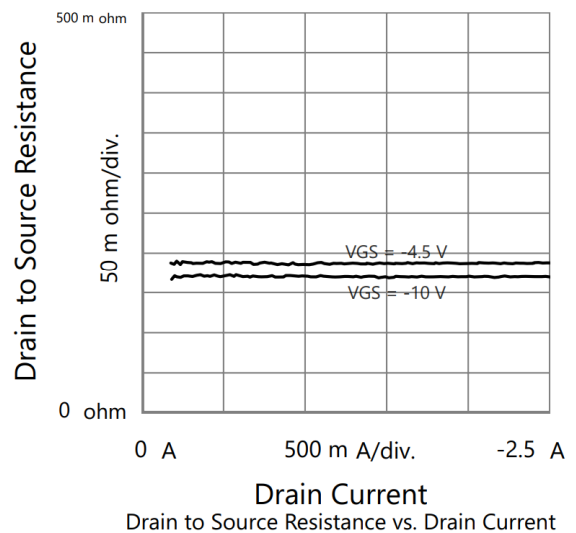
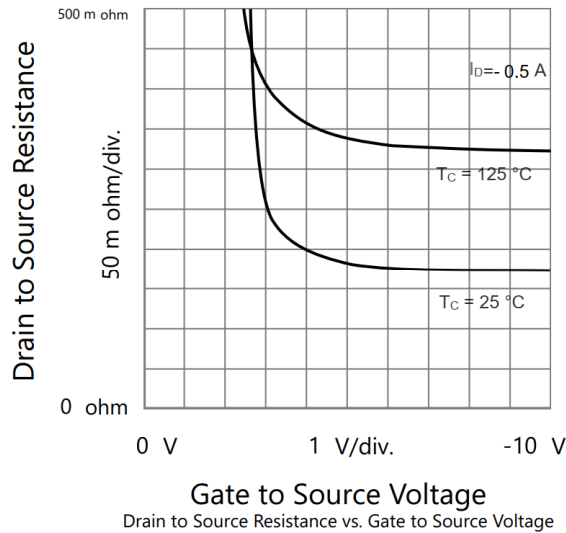
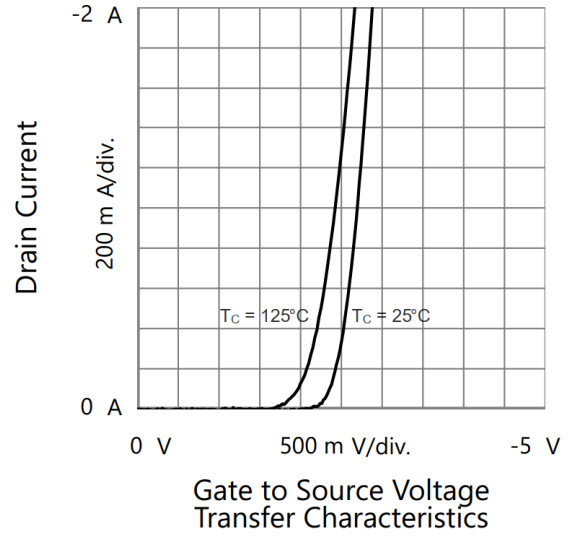
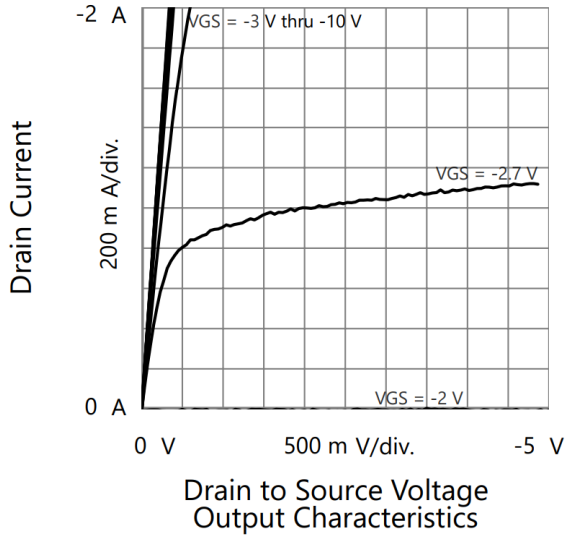
 a. Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.

b. For DESIGN AID ONLY, not subject to production testing.

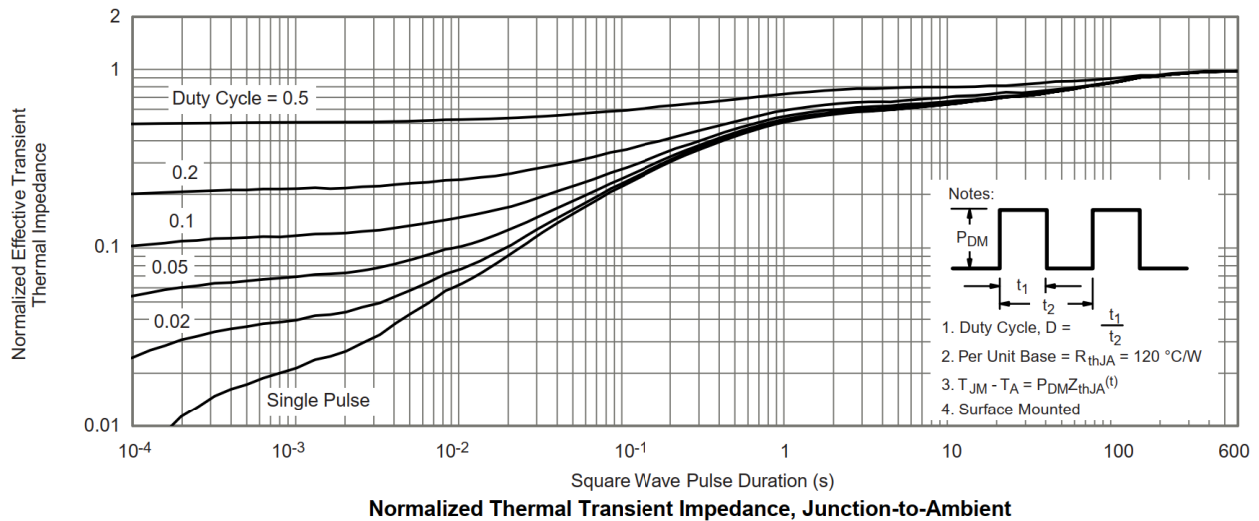
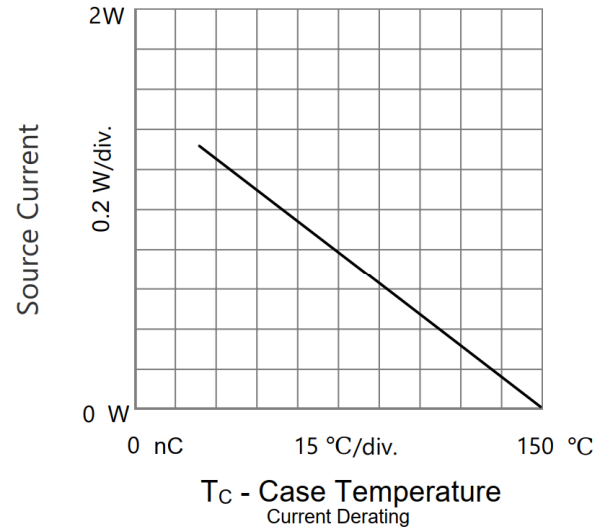
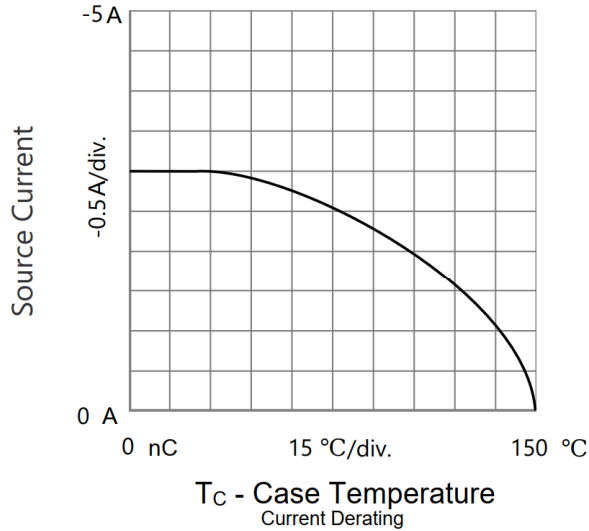
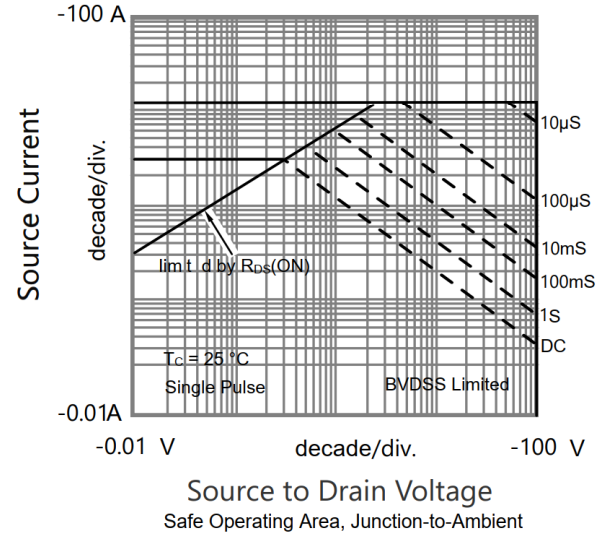
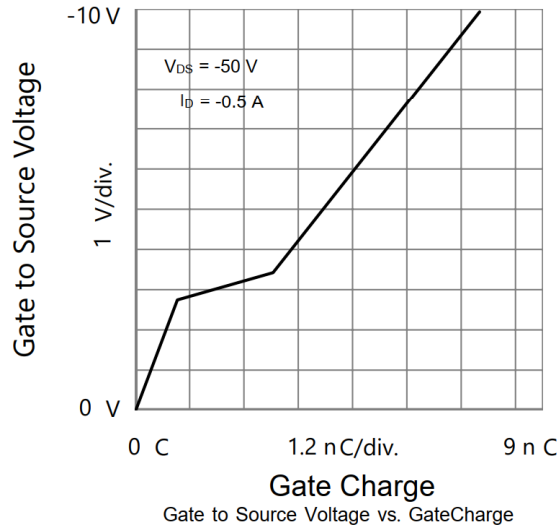
c. Switching time is essentially independent of operating temperature.

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.

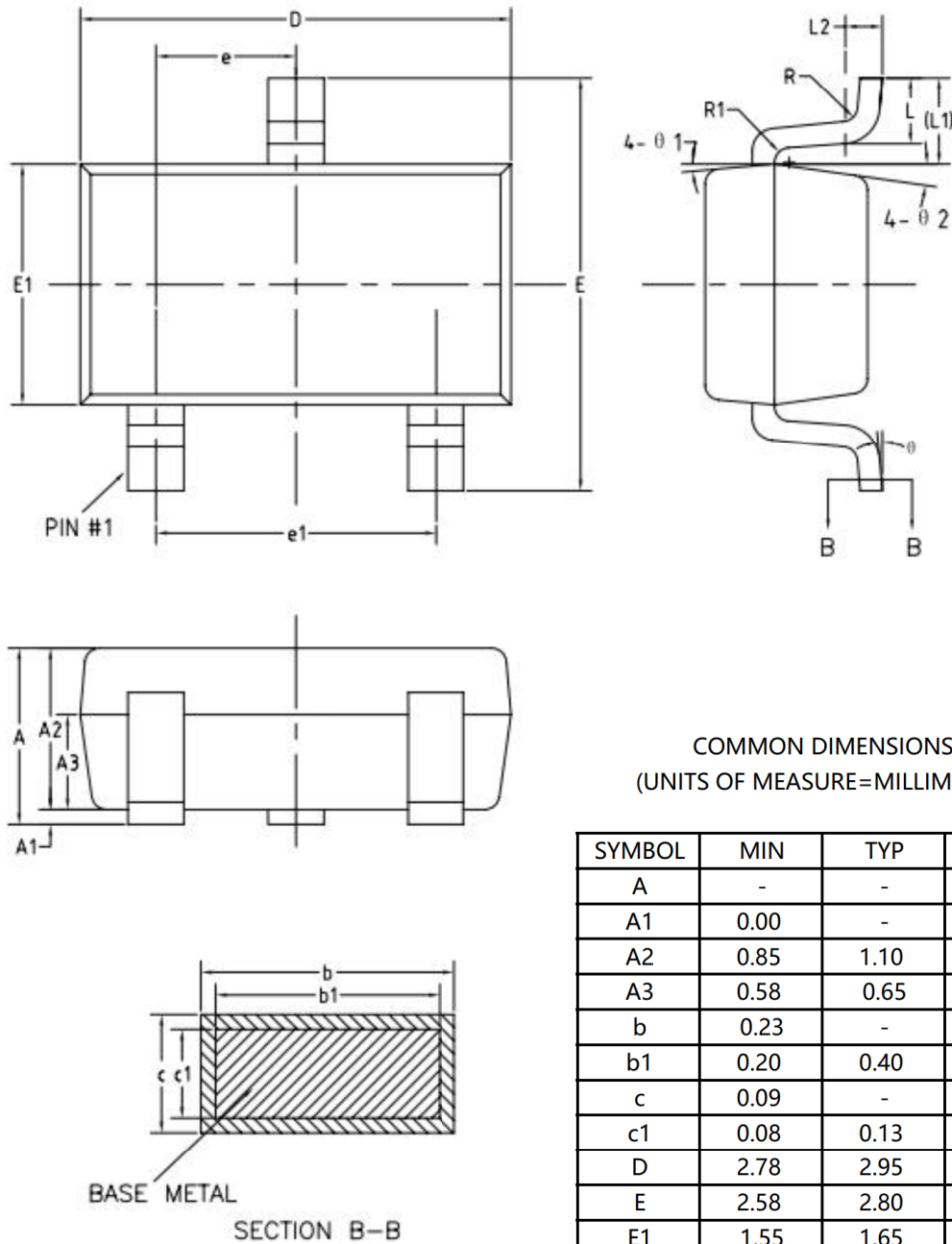
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



SOT-23-3L PACKAGE OUTLINE



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	-	-	1.50
A1	0.00	-	0.18
A2	0.85	1.10	1.35
A3	0.58	0.65	0.72
b	0.23	-	0.53
b1	0.20	0.40	0.50
c	0.09	-	0.22
c1	0.08	0.13	0.21
D	2.78	2.95	3.10
E	2.58	2.80	3.03
E1	1.55	1.65	1.78
e	0.83	0.95	1.07
e1	1.78	1.90	2.02
L	0.28	0.45	0.62
L1	0.59REF		
L2	0.25BSC		
R	0.04	-	-
R1	0.04	-	0.21
θ	0°	-	8°
$\theta 1$	8°	10°	12°
$\theta 2$	8°	10°	12°

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