P-Channel 20 V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (mΩ)(Typ.)	I_D (A)[a]	Q_g (Typ.)
- 20	38 at V_{GS} = - 4.5 V	- 5.5	8.5 nC
	45 at V_{GS} = - 2.5 V		

FEATURES

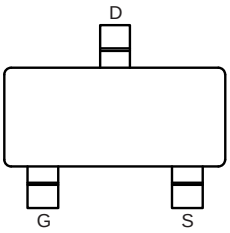
- DT-Trench Power MOSFET
- 100 % R_g and UIS Tested

RoHS COMPLIANT

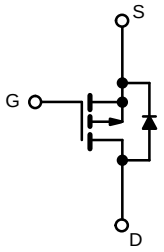
APPLICATIONS

- Load Switch for Portable Devices

SOT-23 Pin Configuration



Top View



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C, unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	- 20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current (T_J = 150 °C)[a]	T_C = 25 °C	I_D	- 5.5	A
	T_C = 70 °C		- 4.6	
Pulsed Drain Current[b]		I_{DM}	- 20	
Single Pulse Avalanche Energy		E_{AS}	5.8	mJ
Maximum Power Dissipation[c]	T_A = 25 °C	P_D	1.8	W
	T_A = 70 °C		1.1	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE RATINGS			
PARAMETER	SYMBOL	TYPICAL	UNIT
Junction-to-Ambient[d]	R_{thJA}	59	°C/W

Notes

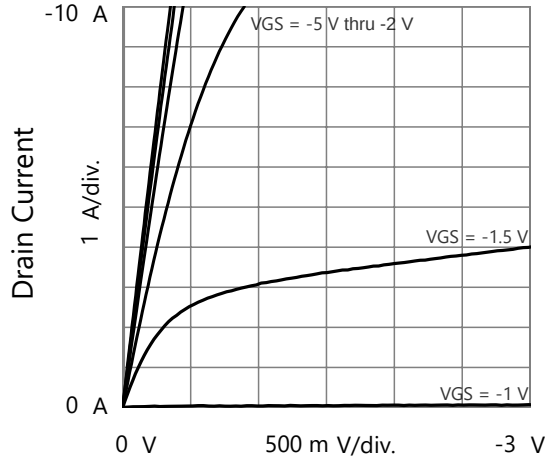
a. Calculated continuous current based on maximum allowablejunction temperature.
b. Repetitive rating; pulse width limited by max. junction temperature.
c. Pd is based on max. junction temperature, using junction-case thermal resistance.
d. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper,in a still air environment with Ta=25 °C.

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, I_D = - 250 µA	- 20			V
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 0.4		- 1.2	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 12 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 20 V, V_{GS} = 0 V			- 1	µA
		V_{DS} = - 16 V, V_{GS} = 0 V, T_J = 55 °C			- 50	
On-State Drain Current[a]	$I_{D(on)}$	$V_{DS} \geq$ - 4.5 V, V_{GS} = - 5 V	- 5.8			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = - 4.5V, I_D = - 3 A		38	45	mΩ
		V_{GS} = - 2.5 V, I_D = - 3 A		45	58	
Forward Transconductance[a]	g_{fs}	V_{DS} = - 5 V, I_D = - 3 A		6.6		S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{DS} = - 10 V, V_{GS} = 0 V, f = 1 MHz		577		pF
Output Capacitance	C_{oss}			70		
Reverse Transfer Capacitance	C_{rss}			56		
Total Gate Charge	Q_g	V_{DS} = - 10 V, V_{GS} = - 4.5 V, I_D = - 3 A		8.5		nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			2		
Gate Resistance	R_g	f = 1 MHz		40		Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = - 10 V, R_L = 1.5 Ω $I_D \cong$ - 3 A, V_{GEN} = - 4.5 V, R_g = 1 Ω		15		ns
Rise Time	t_r			16		
Turn-Off DelayTime	$t_{d(off)}$			25		
Fall Time	t_f			11		
Drain-Source Body Diode Characteristics						
Continous Source-Drain Diode Current	I_S	T_C = 25 °C			- 5.5	A
Pulse Diode Forward Current	I_{SM}				- 20	
Body Diode Voltage	V_{SD}	I_S = - 1 A			- 1	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = - 3 A, dI/dt = 100 A/µs, T_J = 25 °C		15		ns
Body Diode Reverse Recovery Charge	Q_{rr}			5		nC
Reverse Recovery Fall Time	t_a			9		ns
Reverse Recovery Rise Time	t_b			15		

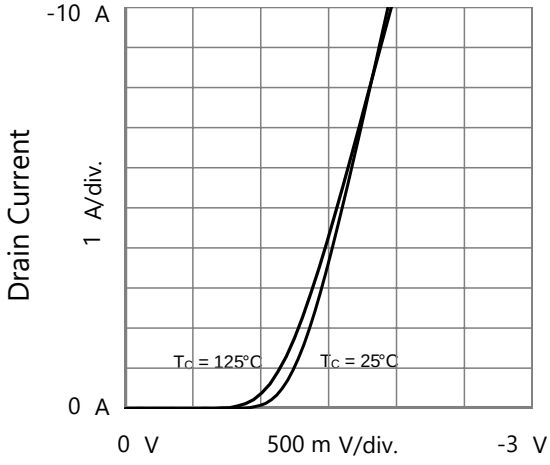
Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

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.

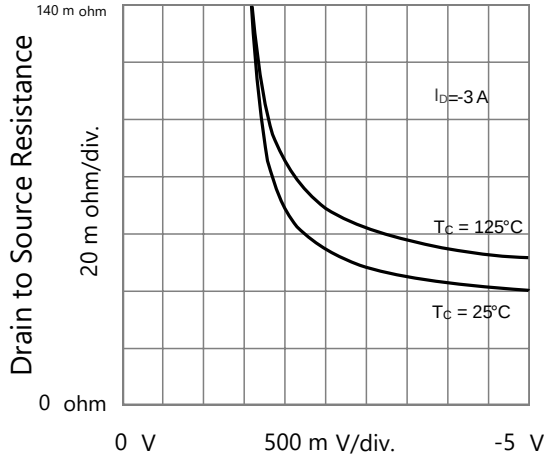
TYPICAL CHARACTERISTICS (25 C, unless otherwise noted)



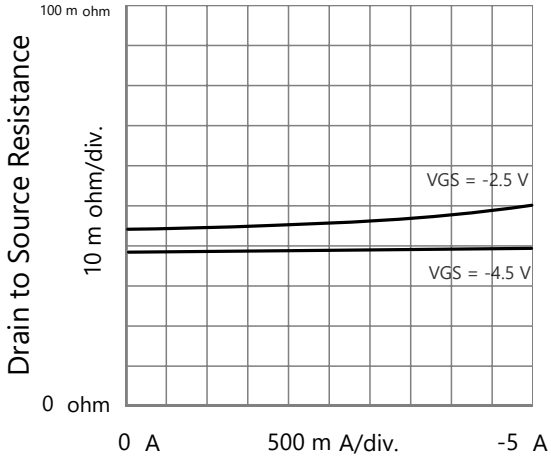
Drain to Source Voltage
Output Characteristics



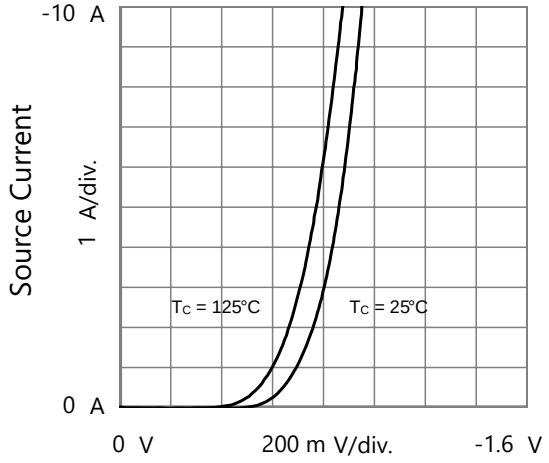
Gate to Source Voltage
Transfer Characteristics



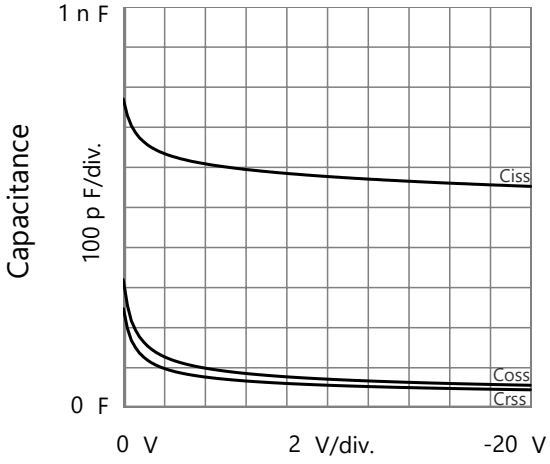
Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltage



Drain Current
Drain to Source Resistance vs. Drain Current

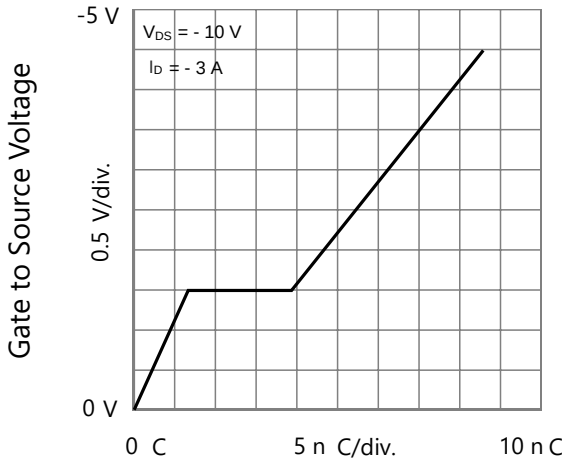


Source to Drain Voltage
Body Diode Forward Characteristics

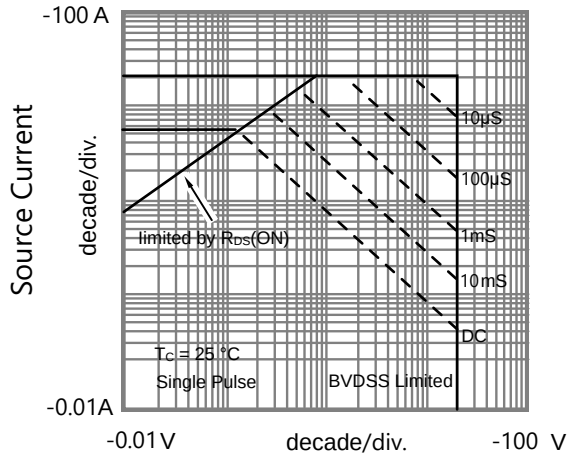


Drain to Source Voltage
Capacitances

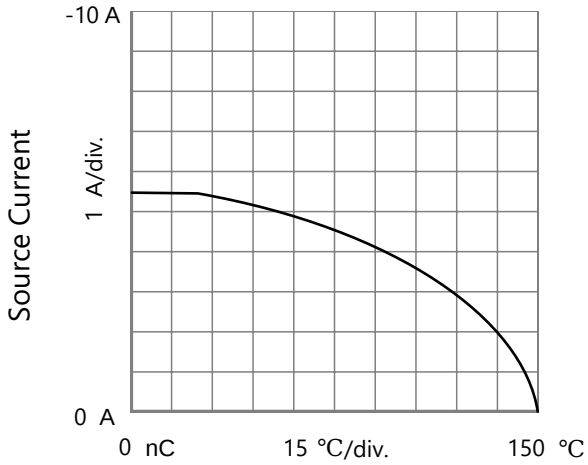
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

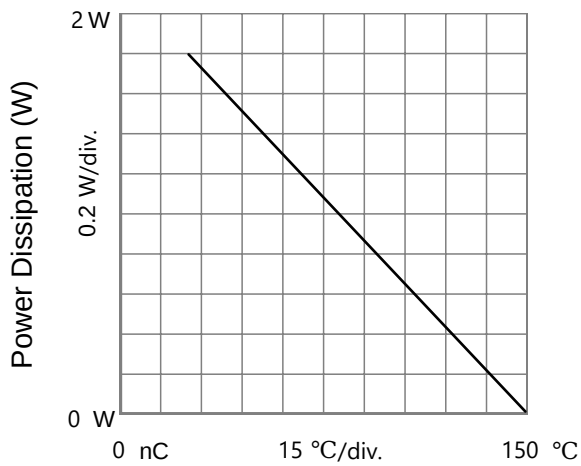


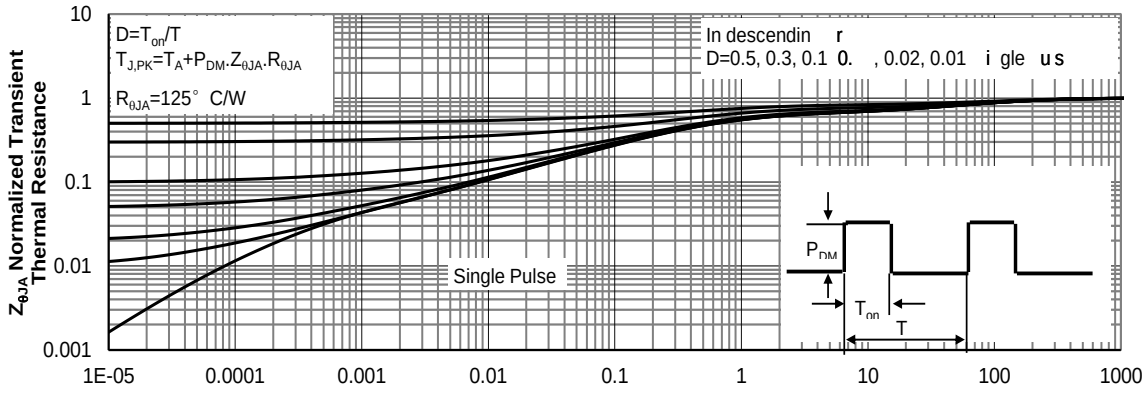
Gate to Source Voltage vs. GateCharge



Safe Operating Area, Junction-to-Ambient

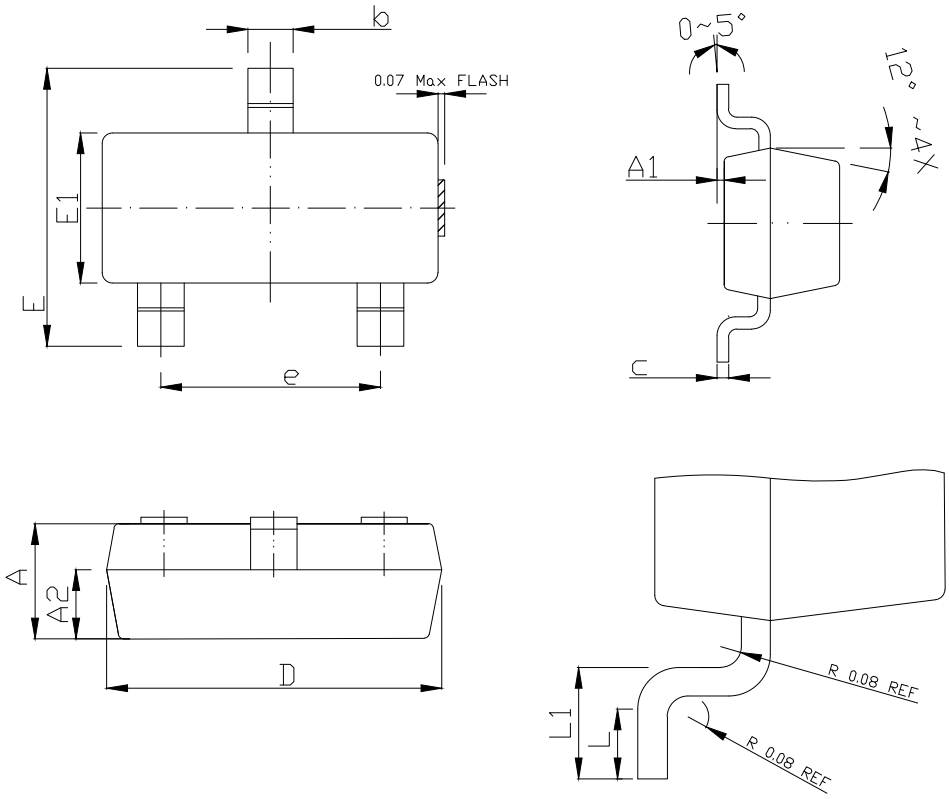






Normalized Thermal Transient Impedance

SOT-23 PACKAGE OUTLINE



COMMON DIMENSIONS

(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.80	1.00	1.30
A1	0.00	0.05	0.15
b	0.25	0.40	0.55
c	0.11 BSC		
D	2.60	2.90	3.20
E	2.10	2.40	2.70
E1	1.10	1.30	1.48
e	1.90 BSC		
L	0.17	-	-
L1	0.28	0.40	0.53
A2	0.60 REF		

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