

Features

- High Dense Cell Design for Extremely Low $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Surface Mount Package
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

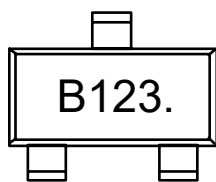
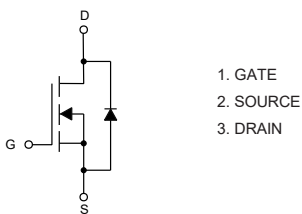
Maximum Ratings

- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature: -55°C to $+150^{\circ}\text{C}$
- Thermal Resistance: 357°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	0.17	A
Drain Current-Pulsed	I_{DM}	0.68	A
Power Dissipation	P_D	0.35	W

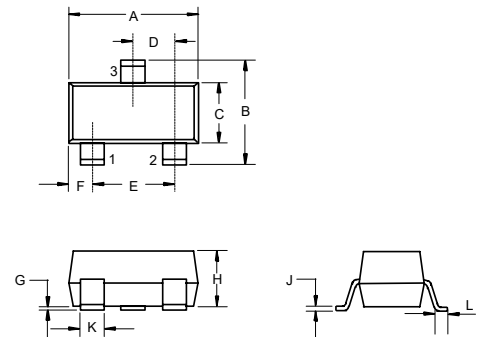
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Internal Structure and Marking Code



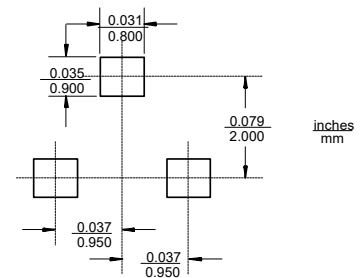
N-Channel MOSFET

SOT-23



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Threshold Voltage ^(Note2)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.8	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 50	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			1	μA
		$V_{DS}=20V, V_{GS}=0V$			10	nA
Drain-Source On-Resistance ^(Note2)	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.17A$			6	Ω
		$V_{GS}=4.5V, I_D=0.17A$			10	
Forward Transconductance ^(Note2)	g_{FS}	$V_{DS}=10V, I_D=0.17A$	80			mS
Diode Forward Voltage ^(Note2)	V_{SD}	$V_{GS}=0V, I_S=0.34A$			1.3	V
Dynamic Characteristics^(Note4)						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		29	60	pF
Output Capacitance	C_{oss}			10	15	
Reverse Transfer Capacitance	C_{rss}			2	6	
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=0.22A$		1.4	2	nC
Gate-Source Charge	Q_{gs}			0.15	0.25	
Gate-Drain Charge	Q_{gd}			0.2	0.4	
Turn-On Delay Time ^(Note3,4)	$t_{d(on)}$	$V_{DD}=30V, V_{GS}=10V, R_G=50\Omega, I_D=0.28A$			8	ns
Turn-On Rise Time ^(Note3,4)	t_r				8	
Turn-Off Delay Time ^(Note3,4)	$t_{d(off)}$				13	
Turn-Off Fall Time ^(Note3,4)	t_f				16	

Note:

- Pulse Test : Pulse Width=300 μs , Duty Cycles $\leq 2\%$.
- Switching Characteristics are Independent of Operating Junction Temperature.
- Granted by Design, Not Subject to Producing.

Curve Characteristics

Fig. 1 - Output Characteristics

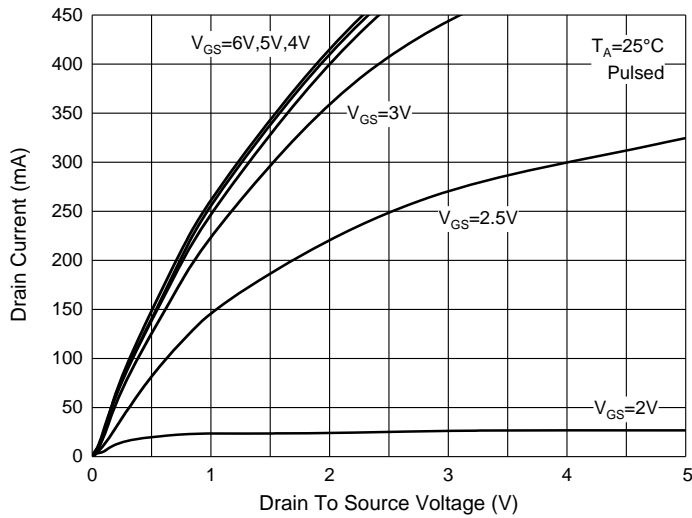


Fig. 2 - Transfer Characteristics

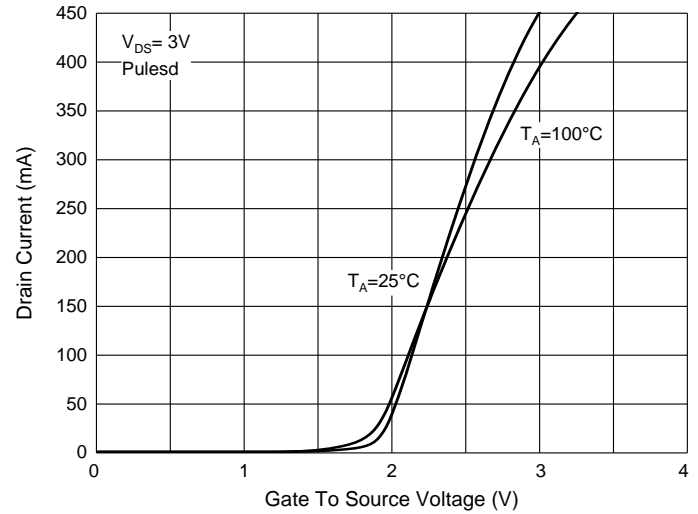


Fig. 3 - $R_{DS(ON)} - I_D$

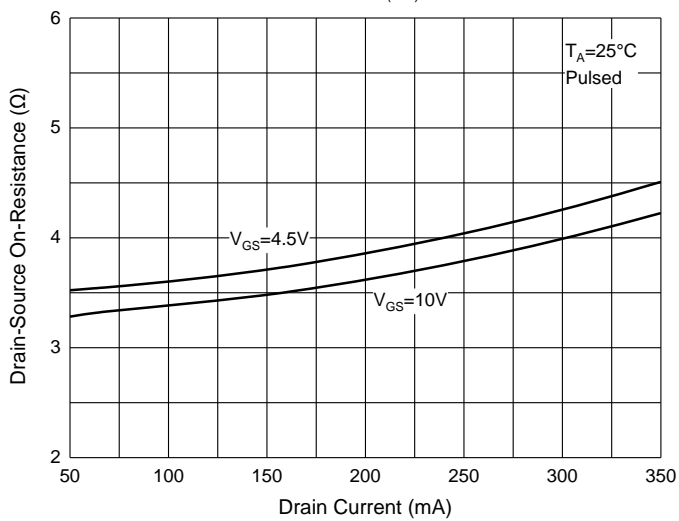


Fig. 4 - $R_{DS(ON)} - V_{GS}$

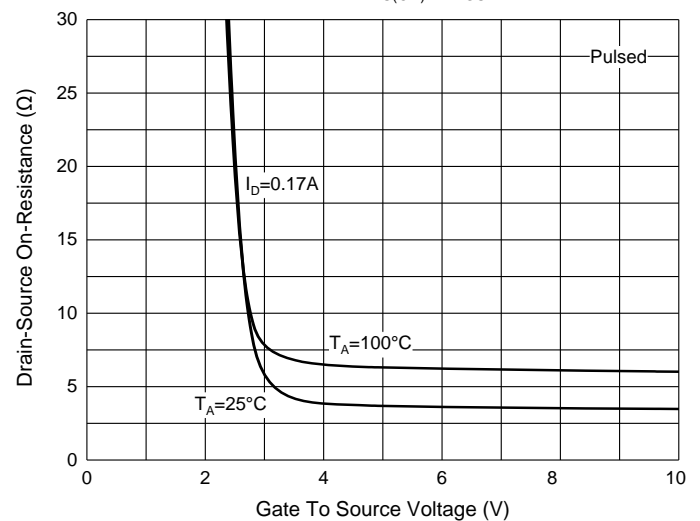


Fig. 5 - $I_S - V_{SD}$

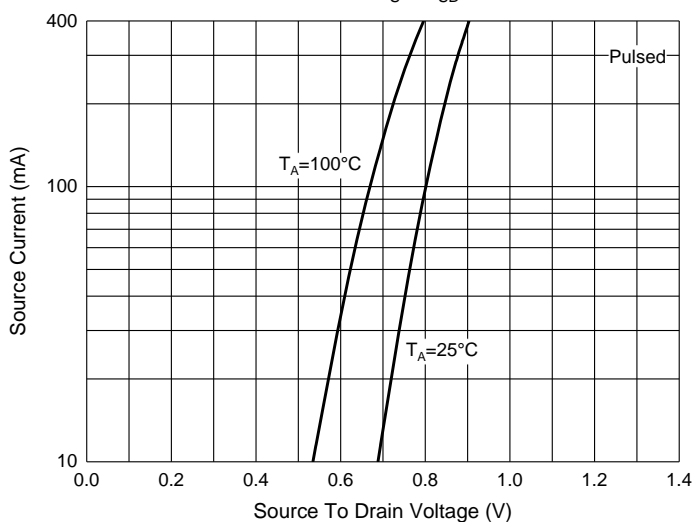
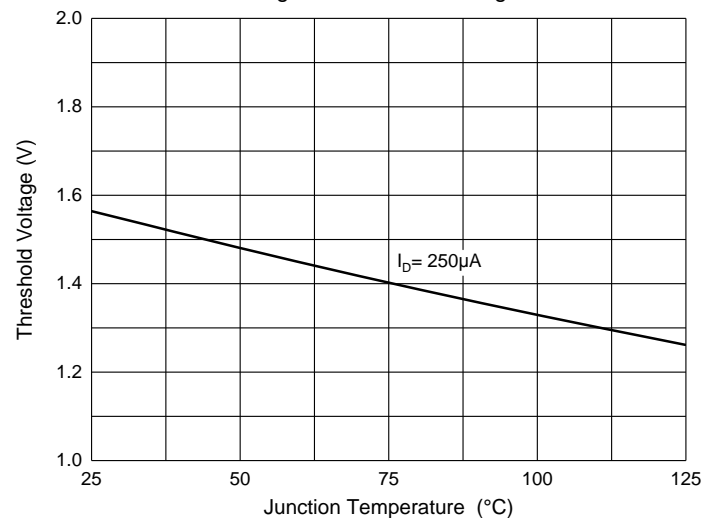


Fig. 6 - Threshold Voltage



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel
Part Number-13P	Tape&Reel: 10Kpcs/Reel

Revision History

Datasheet status	Version No	Release date	Update content
New product datasheet	Rev4-1	20230216	

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