

Features

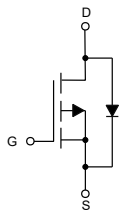
- Halogen Free
- AEC-Q101 Qualified
- Low $R_{DS(ON)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

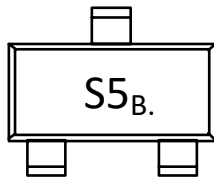
- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature: -55°C to $+150^{\circ}\text{C}$
- Thermal Resistance: 90°C/W Junction to Ambient^(Note 1)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current-Continuous	I_D	-4.2	A
Drain Current-Pulse ^(Note 2)	I_{DM}	-21	A
Power Dissipation	P_D	1.4	W

Internal Structure and Marking Code

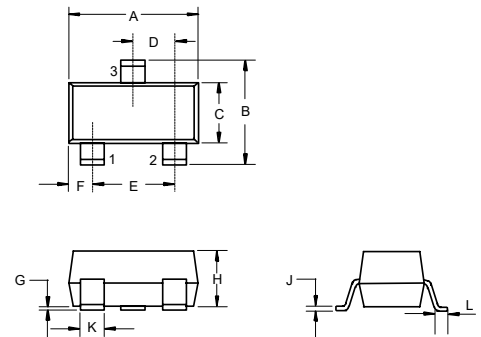


1. GATE
2. SOURCE
3. DRAIN



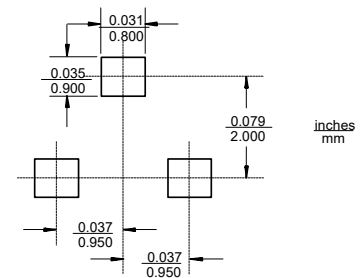
P-Channel MOSFET

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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5	-0.65	-0.9	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Drain-Source On-Resistance ^(Note 3)	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-2.7A$		35	60	m Ω
		$V_{GS}=-2.5V, I_D=-2.7A$		46	80	
		$V_{GS}=-1.8V, I_D=-2.7A$		90		
Body Diode Voltage	V_{SD}	$I_S=-5.4A, V_{GS}=0V$			-1.2	V
Dynamic Characteristics						
Input Capacitance ^(Note 1,4)	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$		1010		pF
Output Capacitance ^(Note 1,4)	C_{oss}			130		
Reverse Transfer Capacitance ^(Note 1,4)	C_{rss}			109		
Total Gate Charge ^(Note 1)	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4A$		10.98		nC
Gate-Source Charge ^(Note 1)	Q_{gs}			2.17		
Gate-Drain Charge ^(Note 1)	Q_{gd}			2.54		
Reverse Recovery Charge	Q_{rr}	$I_F=-4A, di/dt=100A/us$		4.38		nC
Reverse Recovery Time	t_{rr}			24.8		ns
Turn-On Delay Time ^(Note 1,4)	$t_{d(on)}$	$V_{DD}=-4V, V_{GEN}=-4.5V, R_L=1.2\Omega, I_D=-3.3A, R_G=1\Omega$		8.4		ns
Turn-On Rise Time ^(Note 1,4)	t_r			36.2		
Turn-Off Delay Time ^(Note 1,4)	$t_{d(off)}$			76.8		
Turn-Off Fall Time ^(Note 1,4)	t_f			56.2		

Note:

1. Guaranteed by Design, Not Subject to Production Testing.
2. Repetitive Rating: Pulse Width Limited by Max. Junction Temperature.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. These Parameters Have No Way to Verify.

Curve Characteristics

Fig. 1 - On-Resistance Characteristics

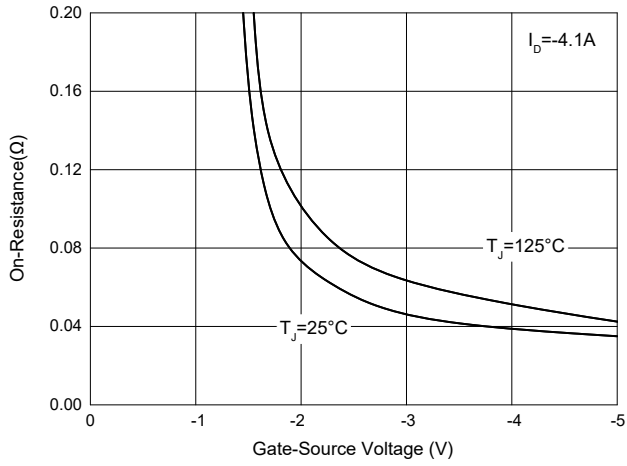


Fig. 2 - Drain Current Characteristics

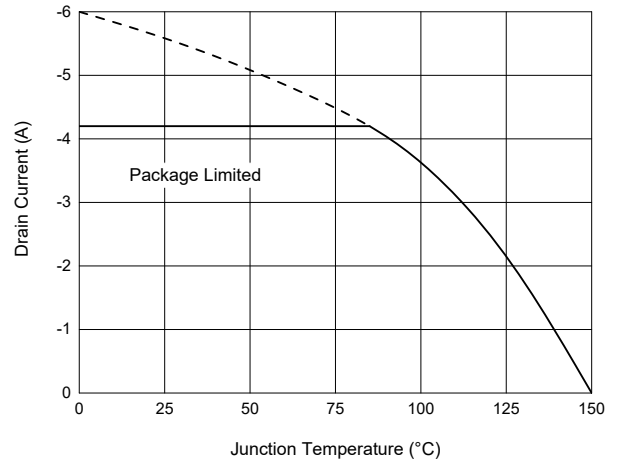


Fig. 3 - Output Characteristics

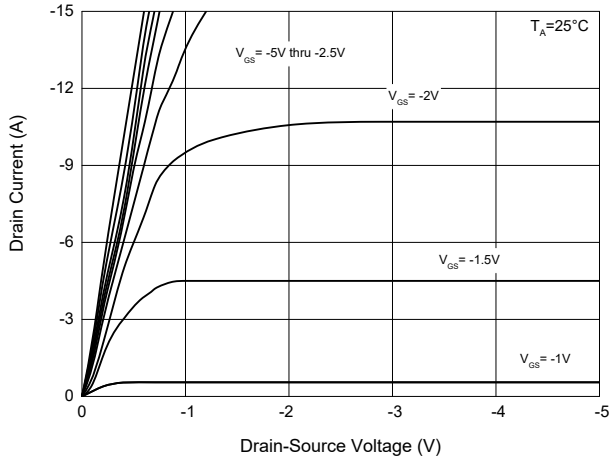


Fig. 4 - On-Resistance Characteristics

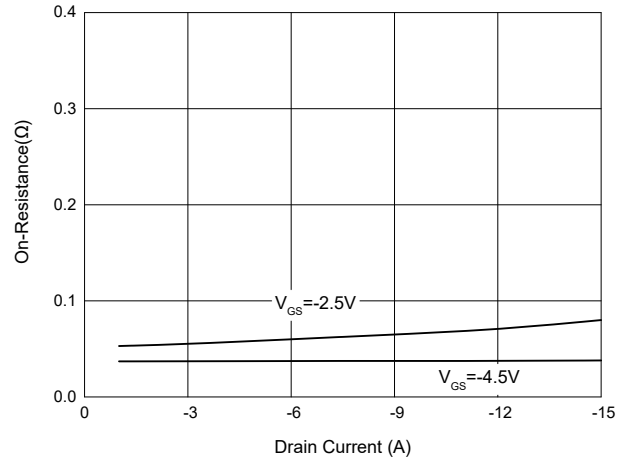


Fig. 5 - Safe Operation Area

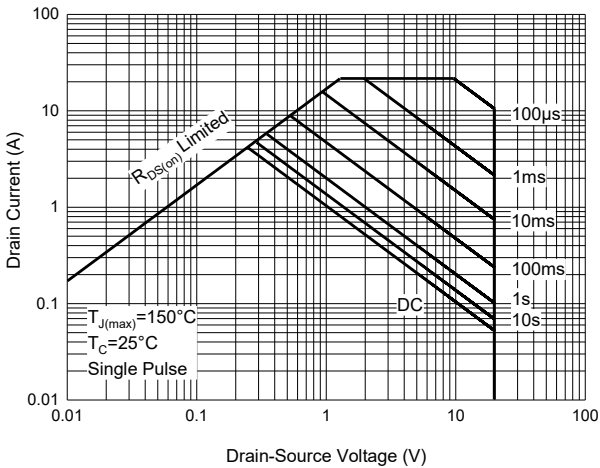
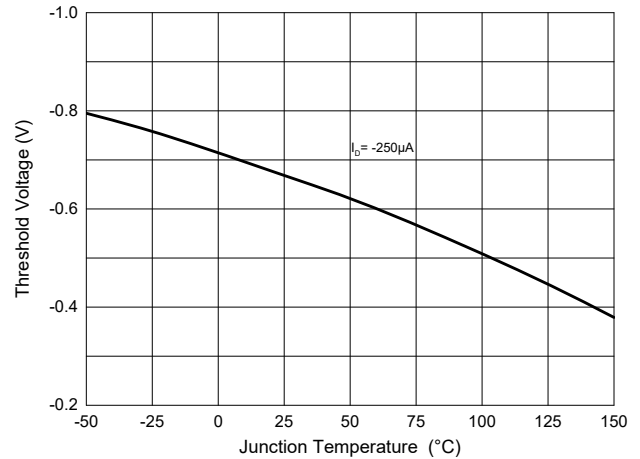


Fig. 6 - Threshold Voltage



Ordering Information

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

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