

Features

- Low $R_{DS(ON)}$
- 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)

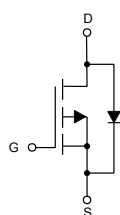
Maximum Ratings

- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature: -55°C to $+150^{\circ}\text{C}$
- Thermal Resistance: 90°C/W Junction to Ambient^(Note 2)

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

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

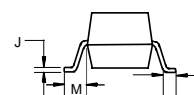
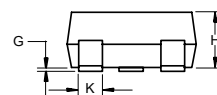
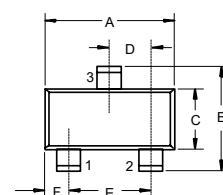


1. GATE
2. SOURCE
3. DRAIN

Marking: S5_B

P-Channel MOSFET

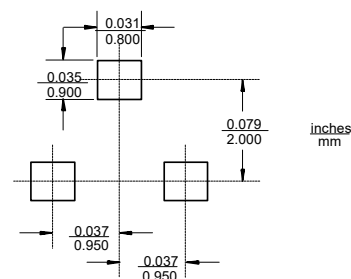
SOT-23



DIMENSIONS

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	
M	0.022 REF		0.55 REF		

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 =-250μA	-20			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.5		-0.9	V
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±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 4)	R _{DS(on)}	V _{GS} =-4.5V, I _D =-4A		30	39	mΩ
		V _{GS} =-2.5V, I _D =-3A		38	49	
		V _{GS} =-1.8V, I _D =-2A		51	63	
Forward Tranconductance ^(Note 4)	g _{FS}	V _{DS} =-5V, I _D =-4.1A	6			S
Dynamic Characteristics						
Input Capacitance ^(Note 2,5)	C _{iss}	V _{DS} =-4V, V _{GS} =0V, f=1MHz		740		pF
Output Capacitance ^(Note 2,5)	C _{oss}			290		
Reverse Transfer Capacitance ^(Note 2,5)	C _{rss}			190		
Total Gate Charge ^(Note 2)	Q _g	V _{DS} =-4V, V _{GS} =-4.5V, I _D =-4.1A		7.8	15	nC
		V _{DS} =-4V, V _{GS} =-2.5V, I _D =-4.1A		4.5	9	
Gate-Source Chage ^(Note 2)	Q _{gs}			1.2		
Gage-Drain Charge ^(Note 2)	Q _{gd}			1.6		
Gate Resistance ^(Note 2,5)	R _g	f=1MHz	1.4	7	14	Ω
Turn-On Delay Time ^(Note 2,5)	t _{d(on)}	V _{DD} =-4V, V _{GEN} =-4.5V, R _L =1.2Ω, I _D =-3.3A, R _G =1Ω		13	20	ns
Turn-On Rise Time ^(Note 2,5)	t _r			35	53	
Turn-Off Delay Time ^(Note 2,5)	t _{d(off)}			32	48	
Turn-Off Fall Time ^(Note 2,5)	t _f			10	20	
Turn-On Delay Time ^(Note 2,5)	t _{d(on)}	V _{DD} =-4V, V _{GEN} =-8V, R _L =1.2Ω, I _D =-3.3A, R _G =1Ω		5	10	ns
Turn-On Rise Time ^(Note 2,5)	t _r			11	17	
Turn-Off Delay Time ^(Note 2,5)	t _{d(off)}			22	33	
Turn-Off Fall Time ^(Note 2,5)	t _f			16	24	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _C =25°C			-4.2	A
Pulse Diode Forward Current ^(Note 4)	I _{SM}				-10	
Body Diode Voltage	V _{SD}	I _F =-3.3A		-0.8	-1.2	V

Note:

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

Curve Characteristics

Fig. 1 - On-Resistance Characteristics

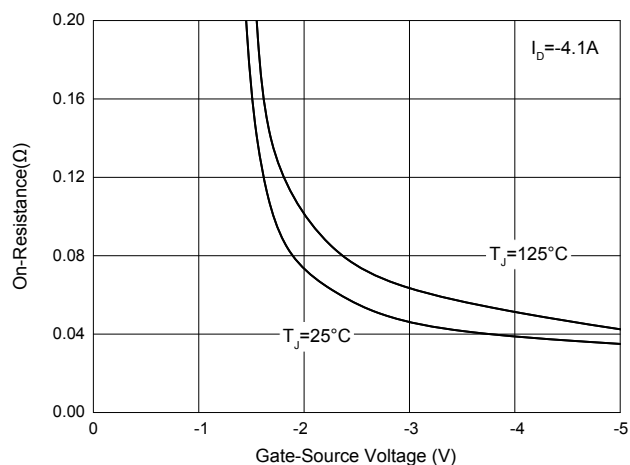


Fig. 2 - Drain Current Characteristics

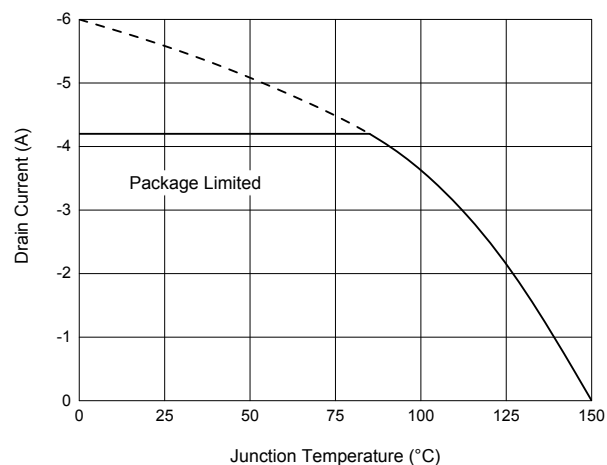


Fig. 3 - Output Characteristics

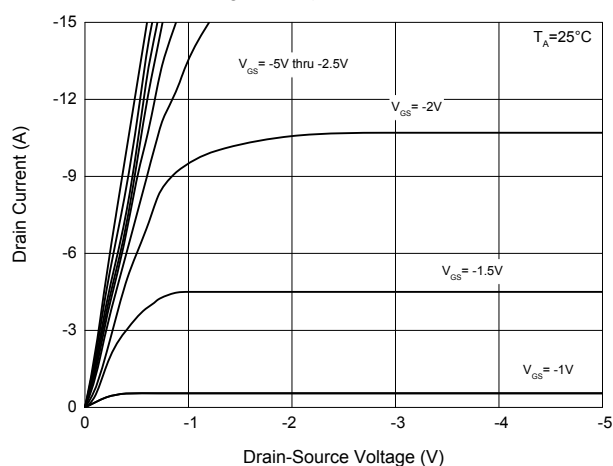


Fig. 4 - On-Resistance Characteristics

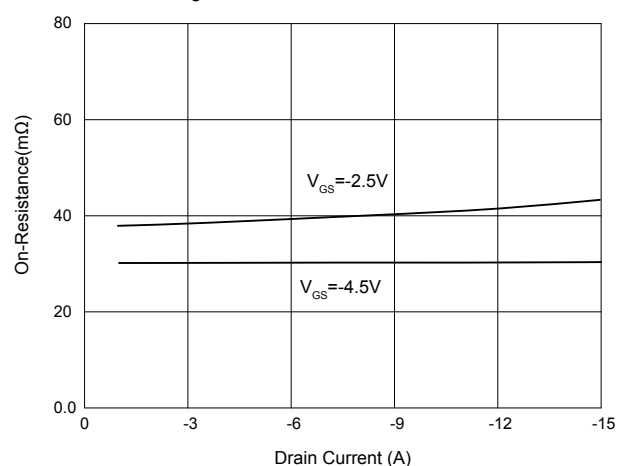
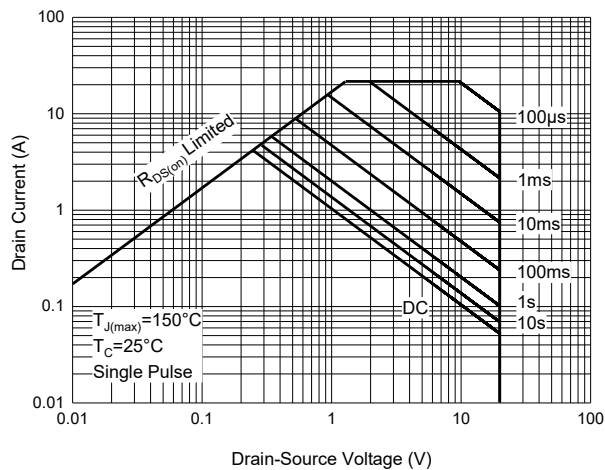


Fig. 5 - Safe Operation Area



Ordering Information

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

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