

Features

- Leading Trench Technology for Low $R_{DS(on)}$
- High Speed Switching
- 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)

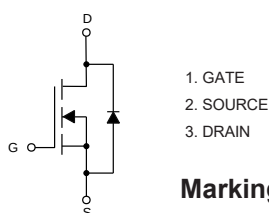
Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 625°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	3.0	A
Pulsed Drain Current	I_{DM}	14	A
Total Power Dissipation	P_D	0.2	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.

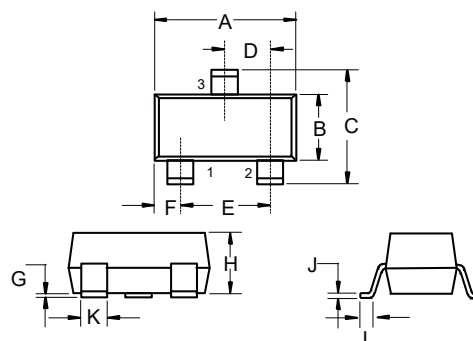
Internal Structure



Marking: TS2.

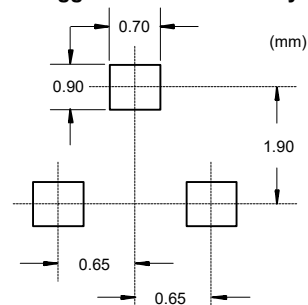
N-CHANNEL MOSFET

SOT-323



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.071	0.087	1.80	2.20	
B	0.045	0.053	1.15	1.35	
C	0.083	0.096	2.10	2.45	
D	0.026		0.65		TYP.
E	0.047	0.055	1.20	1.40	
F	0.012	0.016	0.30	0.40	
G	0.000	0.004	0.00	0.10	
H	0.035	0.044	0.90	1.10	
J	0.002	0.010	0.05	0.25	
K	0.006	0.016	0.15	0.40	
L	0.010	0.018	0.26	0.46	

Suggested Solder Pad Layout



Electrical Characteristics @ 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-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 10V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.55	0.78	1.1	V
Drain-Source On-Resistance ^(Note 2)	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=2.5A$		57	70	m Ω
		$V_{GS}=2.5V, I_D=2.0A$		72	98	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=2.5A$			1.2	V
Maximum Body-Diode Continuous Current	I_S				3.0	A
Dynamic Characteristics^(Note 3)						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		220		pF
Output Capacitance	C_{oss}			34		
Reverse Transfer Capacitance	C_{rss}			26		
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V, I_D=2.5A$		3.6		nC
Gate-Source Charge	Q_{gs}			0.88		
Gate-Drain Charge	Q_{gd}			0.77		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V,$ $R_L=1.5\Omega,$ $R_{GEN}=3\Omega$		6.8		ns
Turn-On Rise Time	t_r			57		
Turn-Off Delay Time	$t_{d(off)}$			14		
Turn-Off Fall Time	t_f			53		

Note 2. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

3. Guaranteed by Design, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Output Characteristics

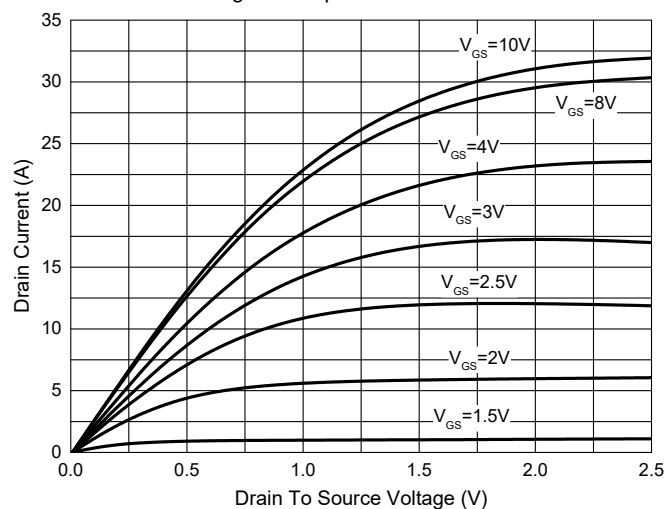


Fig. 2 - Transfer Characteristics

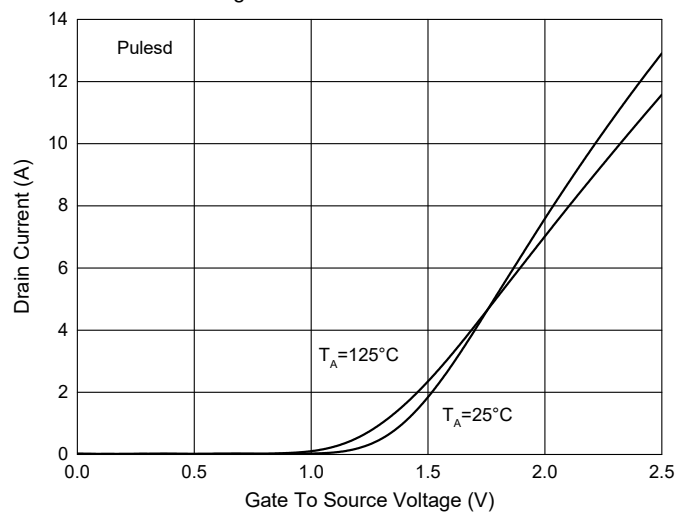


Fig. 3 - $R_{DS(ON)} - I_D$

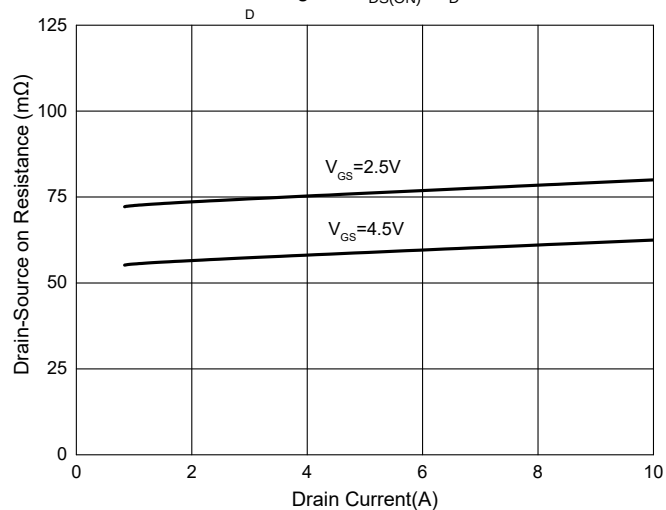


Fig. 4 - Normalized On Resistance Characteristics

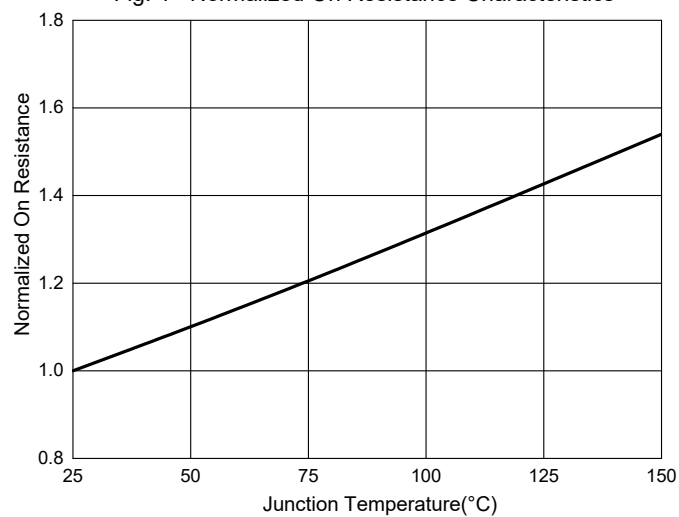


Fig. 5 - Gate Charge

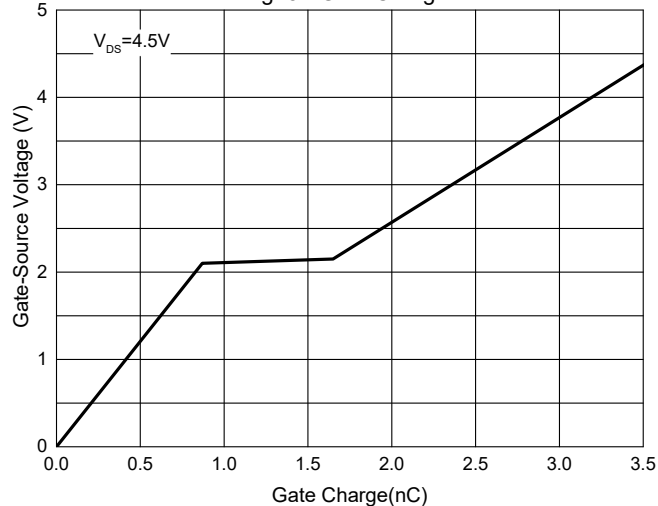
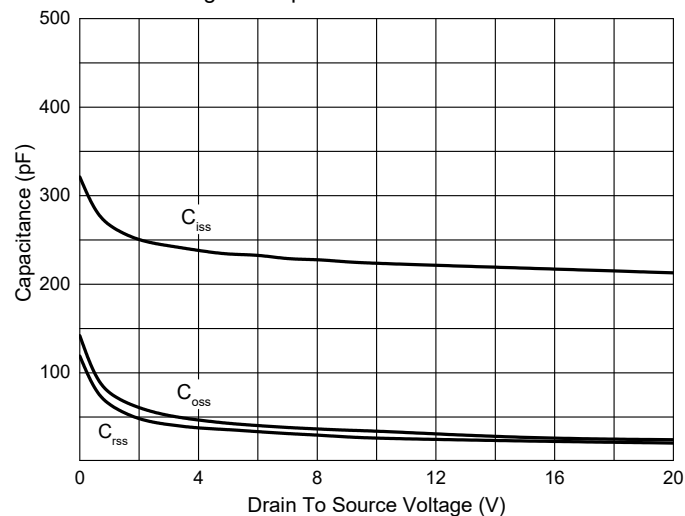


Fig. 6 - Capacitance Characteristics



Ordering Information

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

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