

### Features

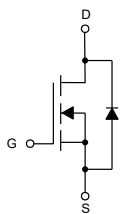
- Leading Trench Technology for Low  $R_{DS(on)}$
- High Speed Switching
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### 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	$V_{GS}$	±8	V
Continuous Drain Current	$I_D$	2.1	A
Pulsed Drain Current	$I_{DM}$	4	A
Total Power Dissipation	$P_D$	0.2	W

### Internal Structure

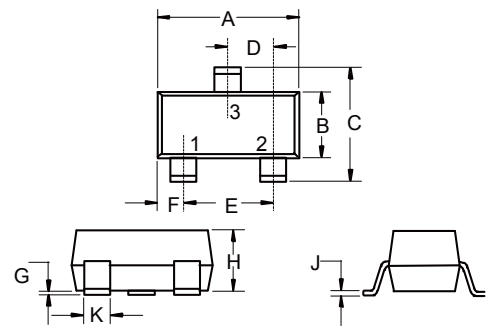


1. GATE
2. SOURCE
3. DRAIN

Marking: TS2

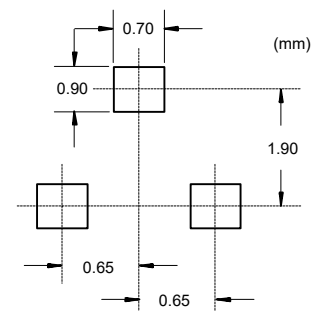
# N-CHANNEL MOSFET

## SOT-323



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	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	

### Suggested Solder Pad Layout



**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=10\mu A$	20			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 8V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=50\mu A$	0.6	0.9	1.2	V
Drain-Source On-Resistance <sup>(Note 1)</sup>	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=3.6A$		50	60	m $\Omega$
		$V_{GS}=2.5V, I_D=3.1A$		60	110	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=0.94A$			1.2	V
Forward Transconductance <sup>(Note 1)</sup>	$g_{FS}$	$V_{DS}=5V, I_D=3.6A$		8		S
<b>Dynamic Characteristics<sup>(Note 2)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		300		pF
Output Capacitance	$C_{oss}$			120		
Reverse Transfer Capacitance	$C_{rss}$			80		
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V, I_D=3.6A$		4	10	nC
Gate-Source Charge	$Q_{gs}$			0.65		
Gate-Drain Charge	$Q_{gd}$			1.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V,$ $R_L=5.5\Omega, I_D\approx 3.6A,$ $V_{GEN}=4.5V, R_g=6\Omega$		7	15	ns
Turn-On Rise Time	$t_r$			55	80	
Turn-Off Delay Time	$t_{d(off)}$			16	60	
Turn-Off Fall Time	$t_f$			10	20	

 Note 1. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

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

## Curve Characteristics

Fig. 1 - Output Characteristics

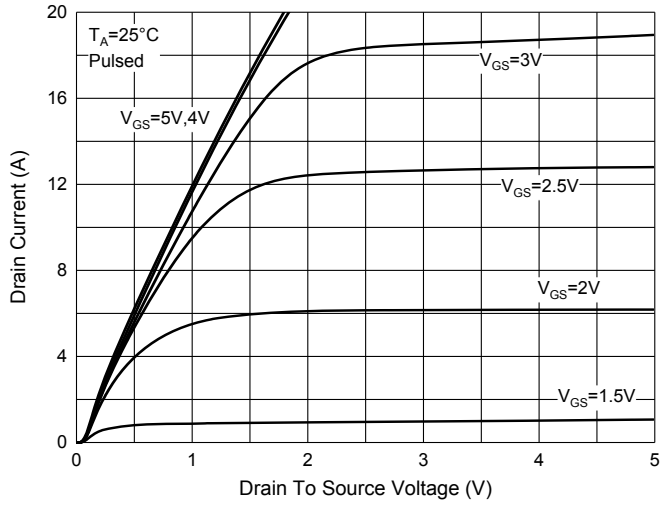


Fig. 2 - Transfer Characteristics

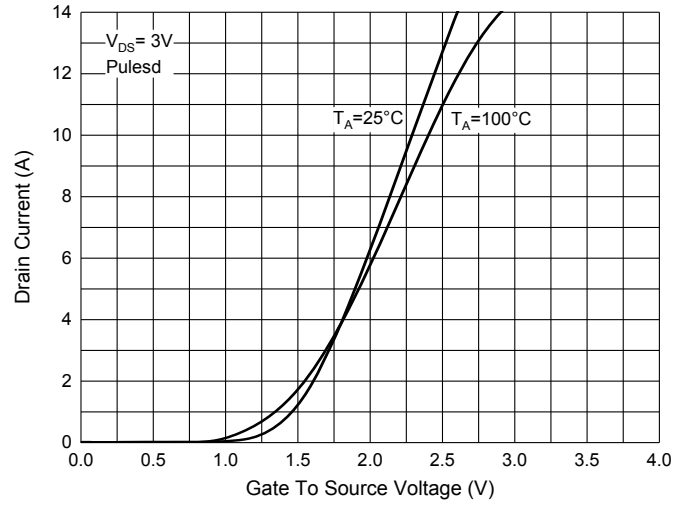


Fig. 3 -  $R_{DS(ON)} - I_D$

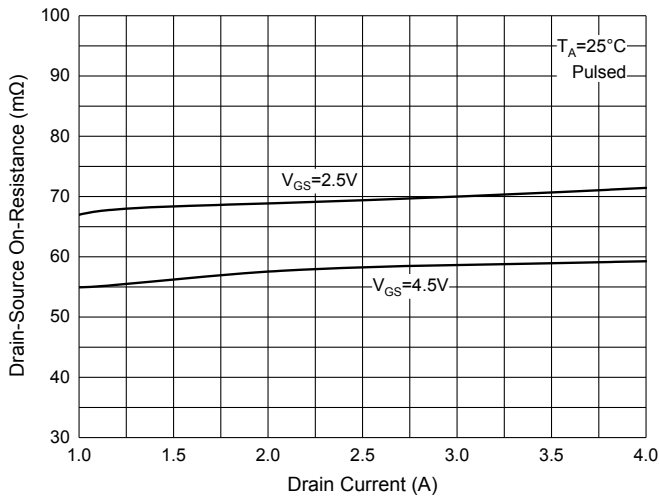


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

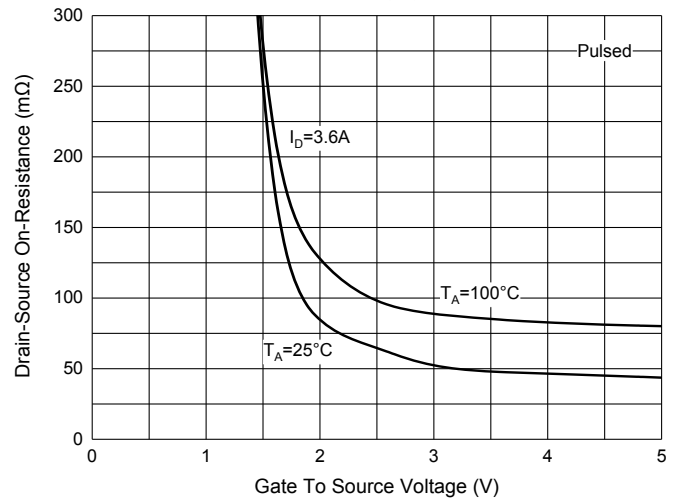


Fig. 5 -  $I_S - V_{SD}$

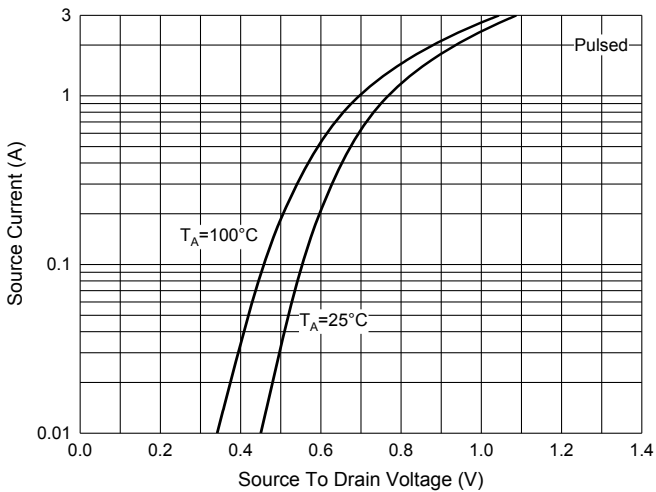
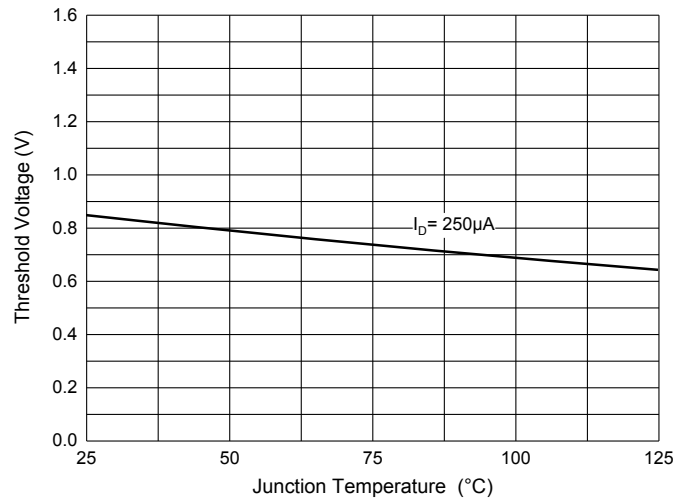


Fig. 6 - Threshold Voltage



## Ordering Information

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

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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