

## Features

- Trench LV MOSFET Technology
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device<sup>(Note1)</sup>
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

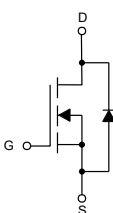
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 125°C/W Junction to Ambient<sup>(Note2)</sup>

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	30	V	
Gate-Source Voltage	$V_{GS}$	±12	V	
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	5.6	A
		$T_A=100^\circ\text{C}$	3.5	A
Pulsed Drain Current <sup>(Note3)</sup>	$I_{DM}$	22.4	A	
Total Power Dissipation <sup>(Note4)</sup>	$P_D$	1.0	W	

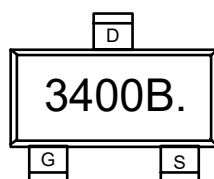
Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ .
3. Repetitive rating; pulse width limited by max. junction temperature.
4.  $P_D$  is based on max. junction temperature, using junction-ambient thermal resistance.

## Internal Structure and Marking Code

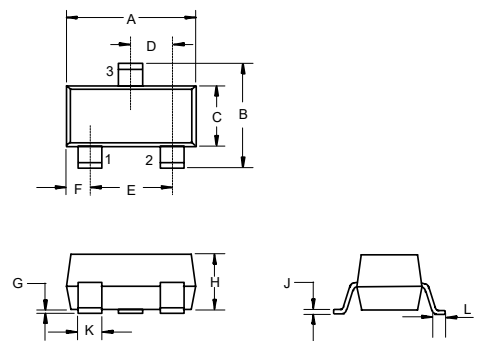


1. GATE
2. SOURCE
3. DRAIN



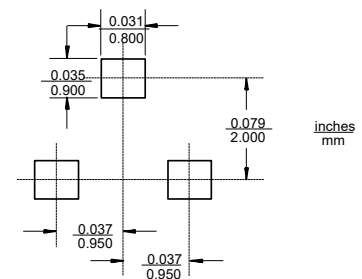
# N-CHANNEL MOSFET

## 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 @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6	0.9	1.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5.6A$		20	28	m $\Omega$
		$V_{GS}=4.5V, I_D=3A$		22	30	
		$V_{GS}=2.5V, I_D=3A$		28	55	
Forward Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=2.8A$		16		S
Gate Resistance	$R_g$	F=1 MHz, Open drain		3.0		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				5.6	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=5.6A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=5.6A, dI_F/dt=100A/\mu s$		8.5		ns
Reverse Recovery Charge	$Q_{rr}$			4.5		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		610		pF
Output Capacitance	$C_{oss}$			62		
Reverse Transfer Capacitance	$C_{rss}$			53		
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=5.6A$		16		nC
Gate-Source Charge	$Q_{gs}$			2.4		
Gate-Drain Charge	$Q_{gd}$			2.0		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, V_{GS}=10V, R_{GEN}=3\Omega, I_{DS}=5.6A$		6.0		ns
Turn-On Rise Time	$t_r$			28		
Turn-Off Delay Time	$t_{d(off)}$			16		
Turn-Off Fall Time	$t_f$			12		

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

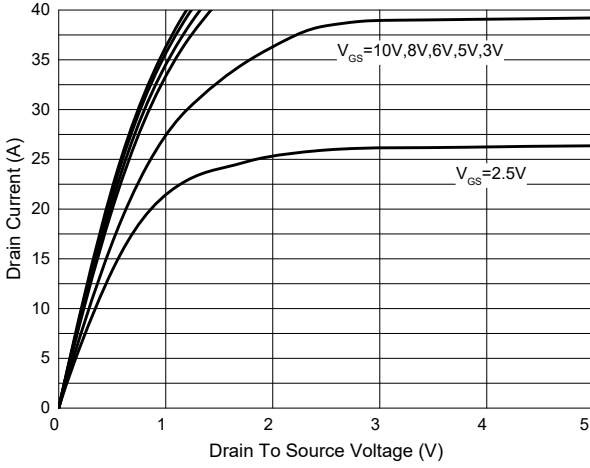


Fig. 2 - Transfer Characteristics

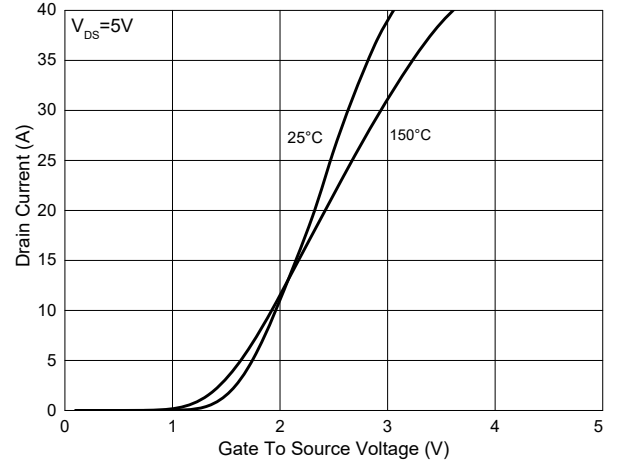


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

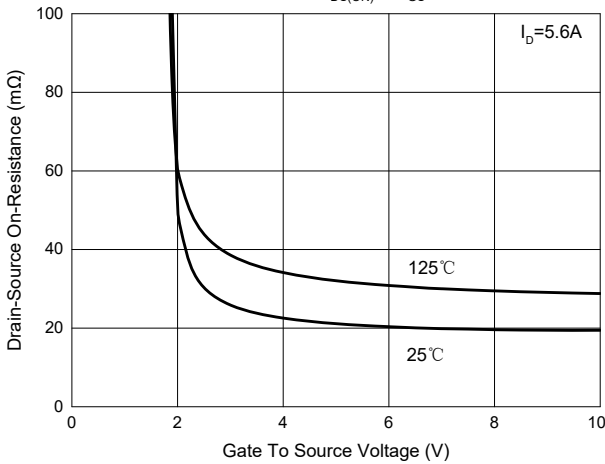


Fig. 4 -  $R_{DS(ON)} - I_D$

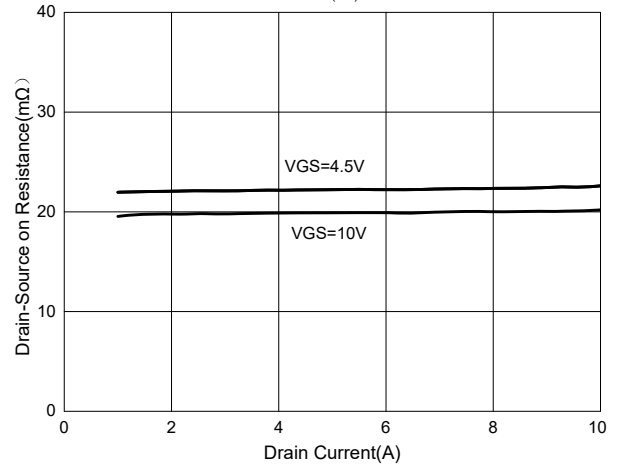


Fig. 5 - Capacitance Characteristics

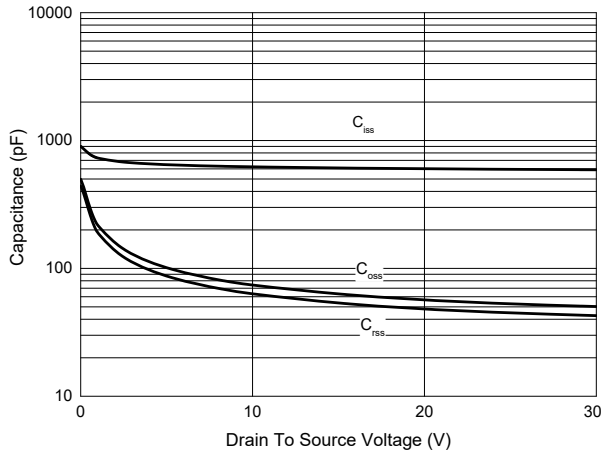
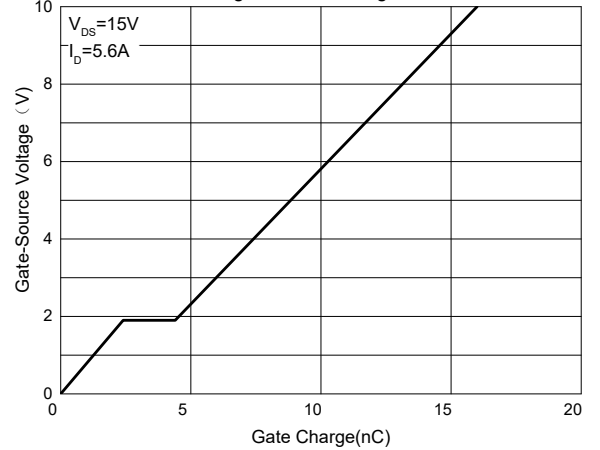


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

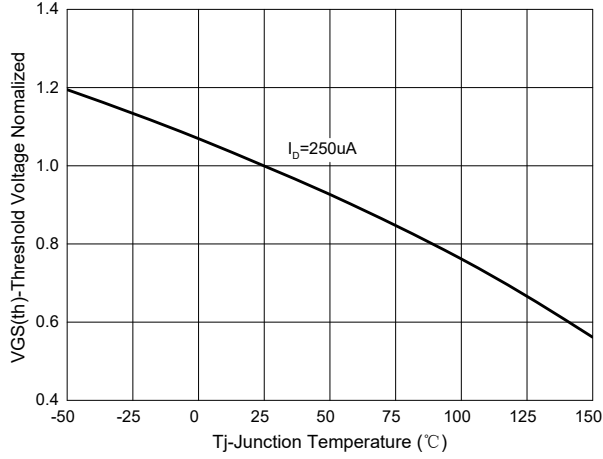


Fig.8-Normalized On Resistance Characteristics

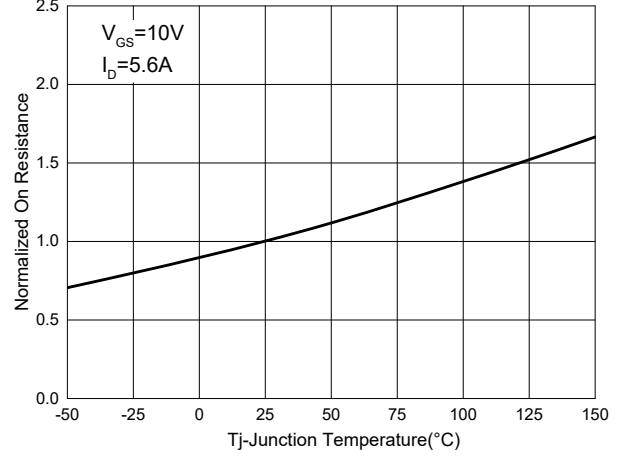


Fig.9 -  $I_S - V_{SD}$

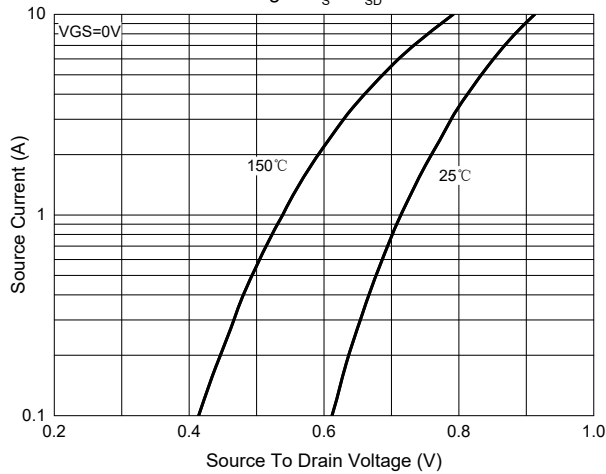


Fig. 10 - Drain Current

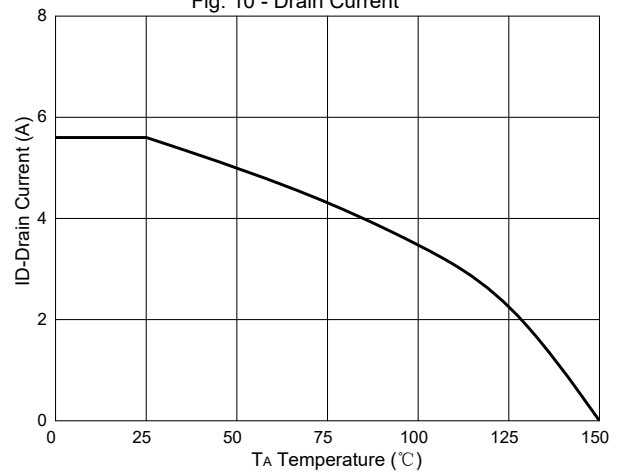
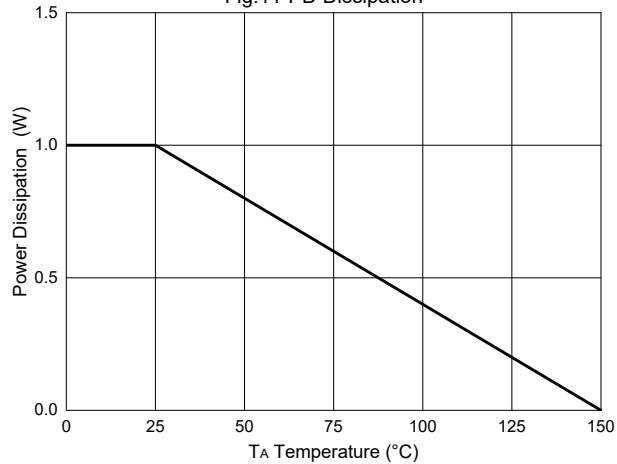


Fig.11-PD Dissipation



## Curve Characteristics

Fig. 12 - Safe Operation Area

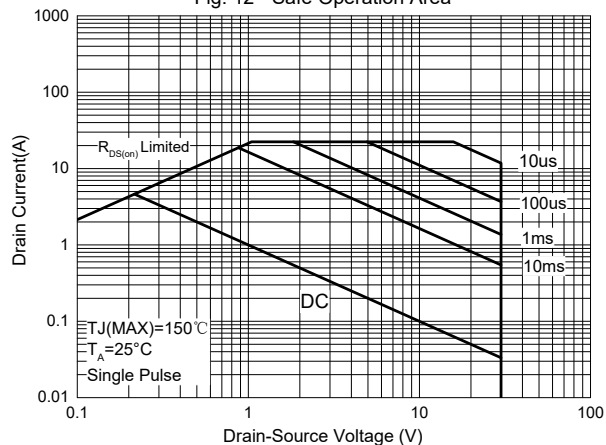
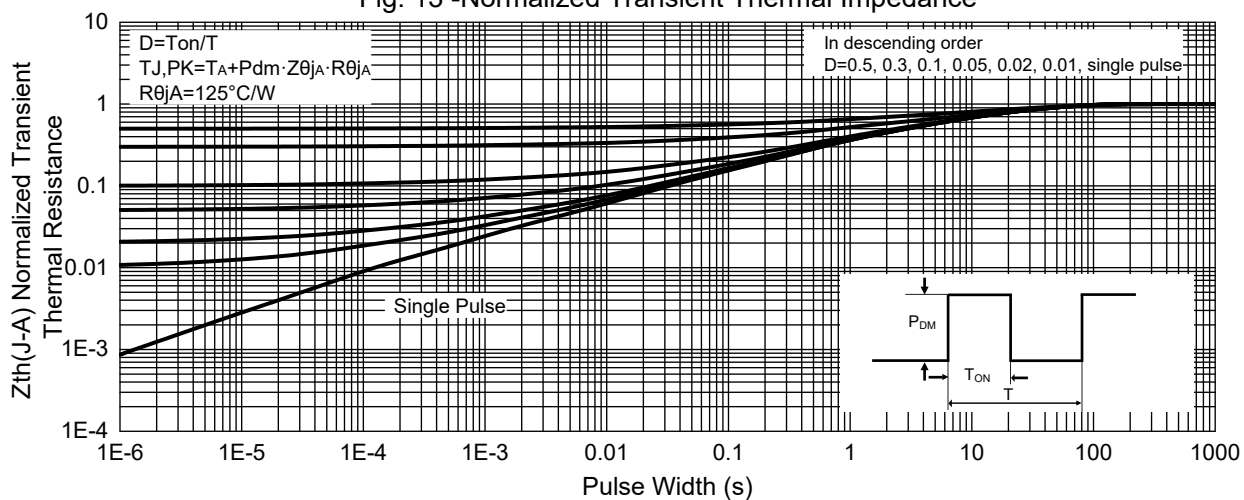


Fig. 13 - Normalized Transient Thermal Impedance



## Ordering Information

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

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