

## Features

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

## Maximum Ratings

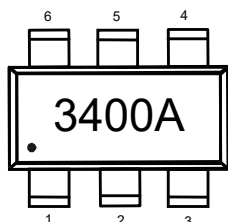
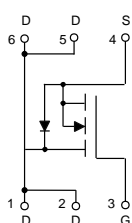
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 70°C/W Junction to Ambient<sup>(Note2)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	±12	V
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	5.8
		$T_A=100^\circ\text{C}$	3.7
Pulsed Drain Current <sup>(Note3)</sup>	$I_{DM}$	23.2	A
Total Power Dissipation <sup>(Note4)</sup>	$P_D$	1.8	W

Note:

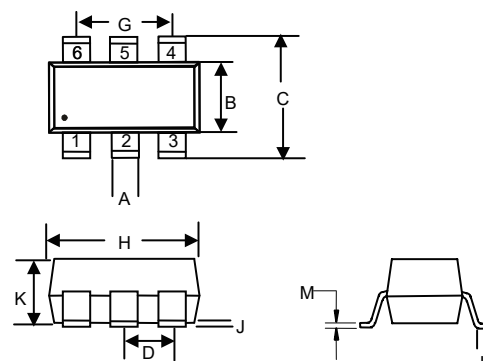
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment 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



# N-CHANNEL MOSFET

## SOT23-6L



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.012	0.020	0.30	0.50	
B	0.051	0.070	1.30	1.80	
C	0.087	0.126	2.20	3.20	
D	0.037		0.95		TYP.
G	0.074		1.90		TYP.
H	0.106	0.122	2.70	3.10	
J	0.002	0.006	0.05	0.15	
K	0.030	0.051	0.75	1.30	
L	0.012	0.024	0.30	0.60	
M	0.003	0.008	0.08	0.22	

**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-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.9	1.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5.8A$		20	32	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$		21.5	38	
		$V_{GS}=2.5V, I_D=4A$		26	45	
Forward Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=5A$		20		S
Gate Resistance	$R_g$	f=1 MHz, Open drain		12		$\Omega$
<b>Diode Characteristics</b>						
Diode Forward Current	$I_S$				5.8	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=5.6A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=5.6A, di/dt=100A/\mu s$		10		nS
Reverse Recovery Charge	$Q_{rr}$			3.7		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		580		pF
Output Capacitance	$C_{oss}$			60		
Reverse Transfer Capacitance	$C_{rss}$			50		
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=5.6A$		16.3		nC
Gate-Source Charge	$Q_{gs}$			2.2		
Gate-Drain Charge	$Q_{gd}$			2.1		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=15V, V_{GS}=10V, I_D=5.6A, R_G=3\Omega$		5.5		ns
Turn-on Rise Time	$t_r$			28.3		
Turn-off Delay Time	$t_{d(off)}$			24.8		
Turn-off Fall Time	$t_f$			13.7		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

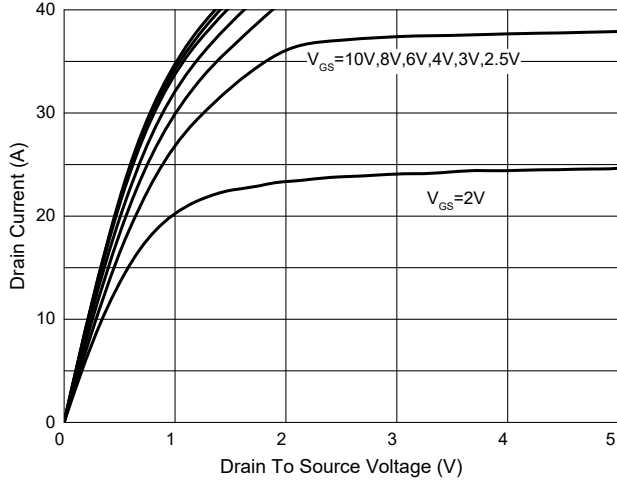


Fig. 2 - Transfer Characteristics

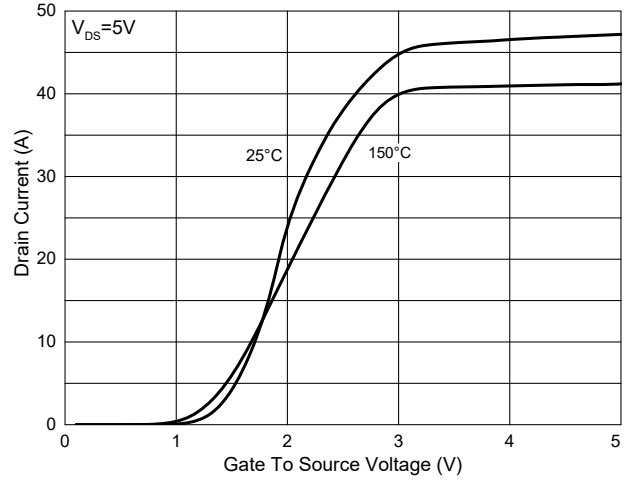


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

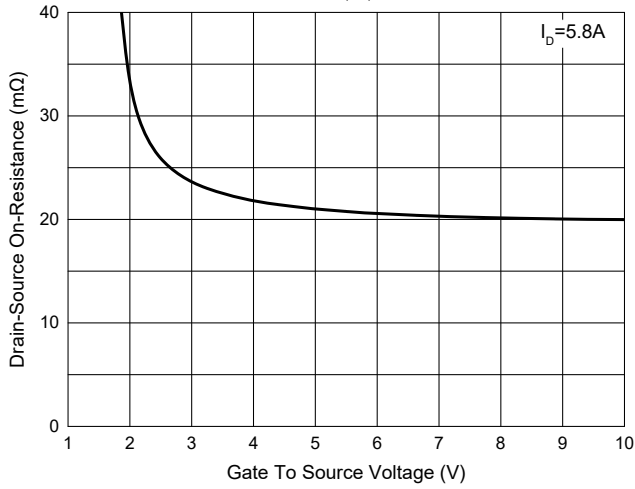


Fig. 4 -  $R_{DS(ON)} - I_D$

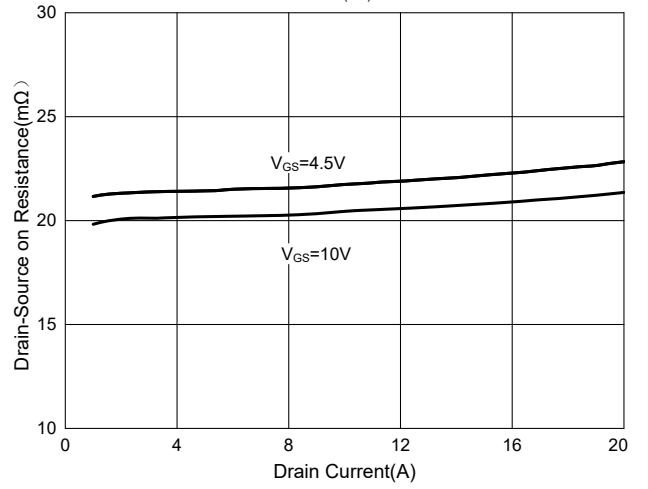


Fig. 5 - Capacitance Characteristics

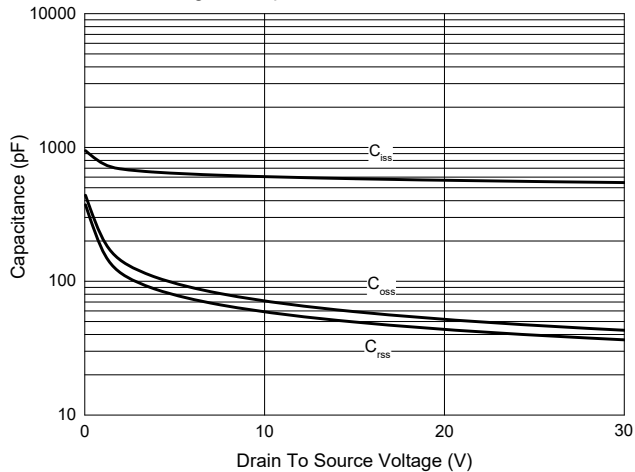
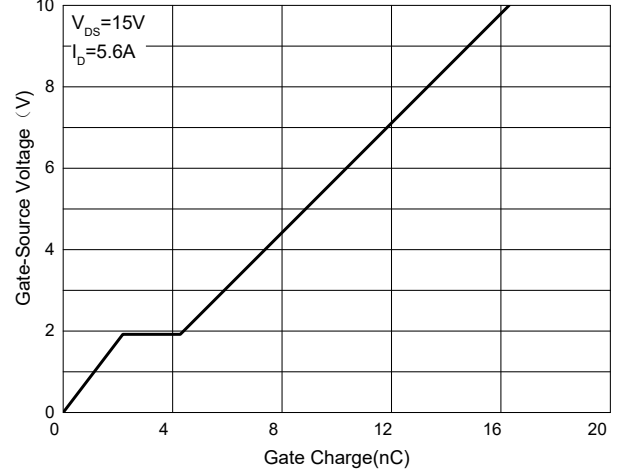


Fig. 6 - Gate Charge



**Curve Characteristics**

Fig. 7 - Normalized Threshold Voltage

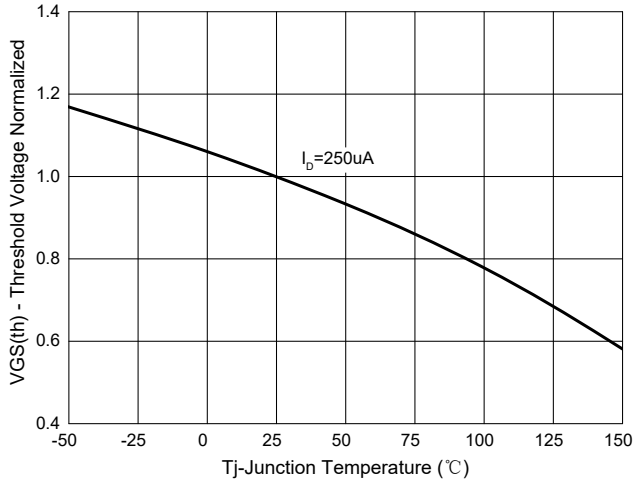


Fig.8-Normalized On Resistance Characteristics

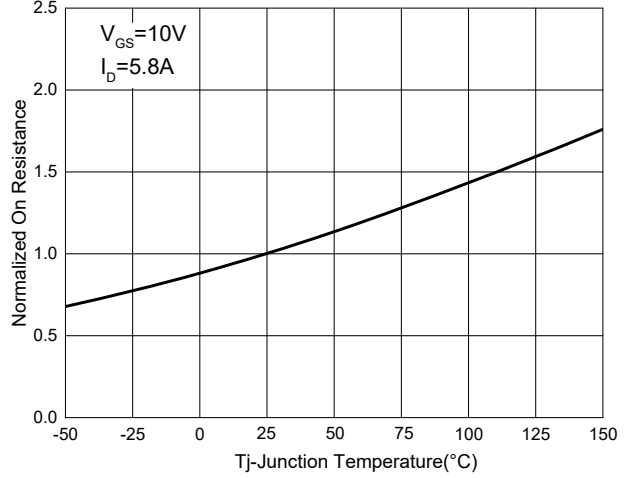


Fig.9 -  $I_s - V_{SD}$

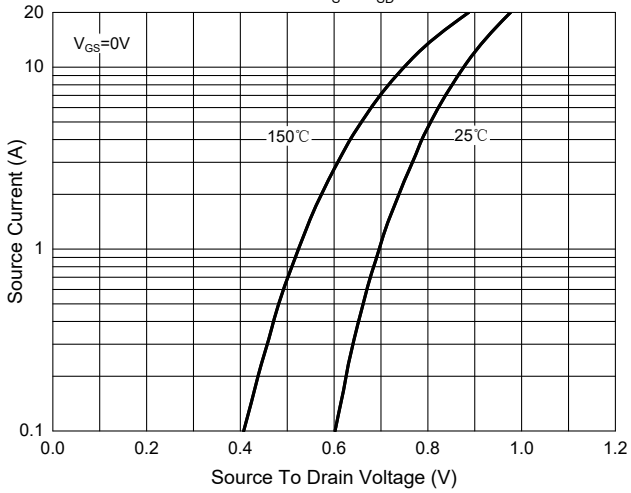


Fig. 10 - Drain Current

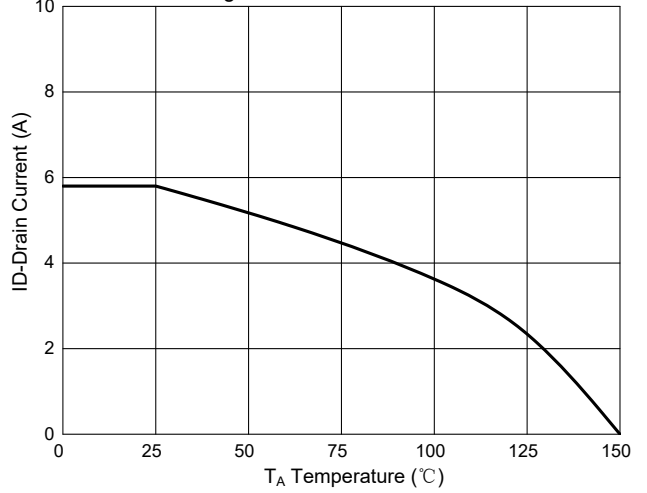
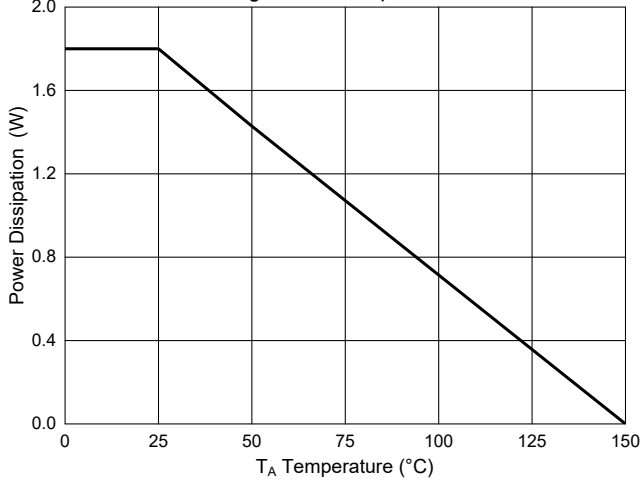


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

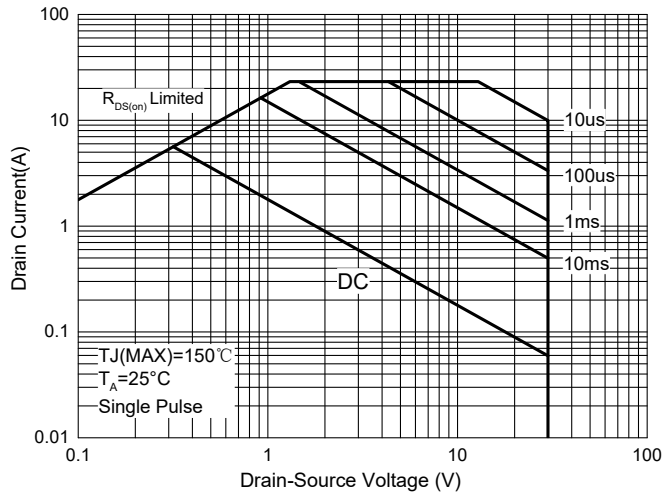
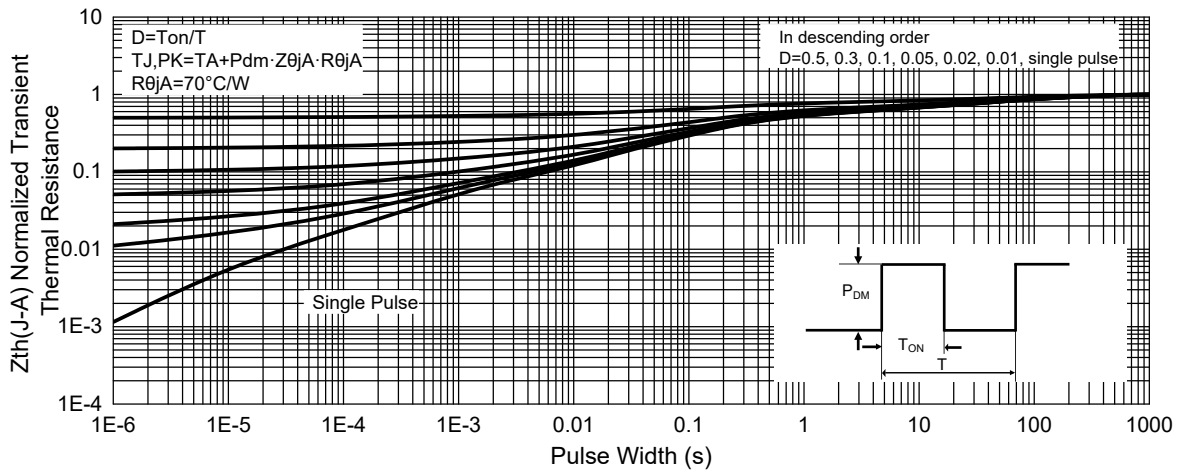


Fig. 13 -Normalized Transient Thermal Impedance



## Ordering Information

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

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