

## Features

- 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

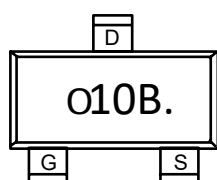
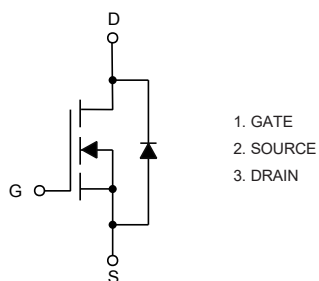
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 105°C/W Junction to Ambient (Note 2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V <sub>DS</sub>	60	V
Gate-Source Voltage		V <sub>GS</sub>	±16	V
Continuous Drain Current	T <sub>A</sub> =25°C	I <sub>D</sub>	3	A
	T <sub>A</sub> =100°C		1.9	
Pulsed Drain Current <sup>(Note 3)</sup>		I <sub>DM</sub>	12	A
Total Power Dissipation <sup>(Note 4)</sup>		P <sub>D</sub>	1.2	W

Note:

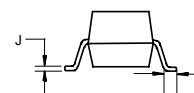
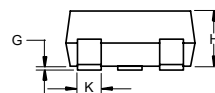
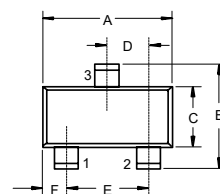
- Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment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

## Internal Structure and Marking Code



# N-CHANNEL MOSFET

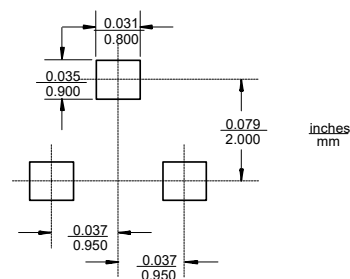
## SOT-23



### 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	

### Suggested Solder Pad Layout

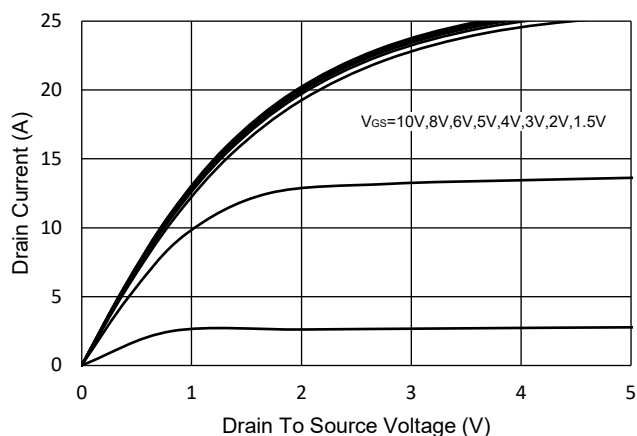


# Electrical Characteristics @ 25°C (Unless Otherwise Specified)

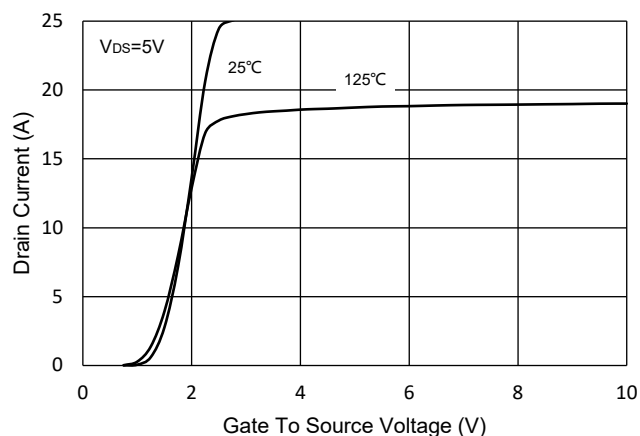
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60			V
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±16V			±100	nA
		V <sub>DS</sub> =0V, V <sub>GS</sub> =±10V			±50	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V			1	μA
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.9	1.3	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =3A		67	100	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A		70	120	
Gate Resistance	R <sub>g</sub>	f=1 MHz, Open drain		2		Ω
Forward Tranconductance	g <sub>FS</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =2A		13		S
Diode Characteristics						
Continuous Body Diode Current	I <sub>S</sub>				3	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =3A			1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =1.5A, di/dt=530A/μs		6.6		ns
Reverse Recovery Charge	Q <sub>rr</sub>			9.1		nC
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz		638		pF
Output Capacitance	C <sub>oss</sub>			25		
Reverse Transfer Capacitance	C <sub>rss</sub>			21		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =10V, I <sub>D</sub> =3A		16		nC
Gate-Source Charge	Q <sub>gs</sub>			1.3		
Gate-Drain Charge	Q <sub>gd</sub>			2.4		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =10V, R <sub>G</sub> =2.2Ω, I <sub>D</sub> =1.5A		2.1		ns
Turn-On Rise Time	t <sub>r</sub>			14		
Turn-Off Delay Time	t <sub>d(off)</sub>			21		
Turn-Off Fall Time	t <sub>f</sub>			1.7		

## Curve Characteristics

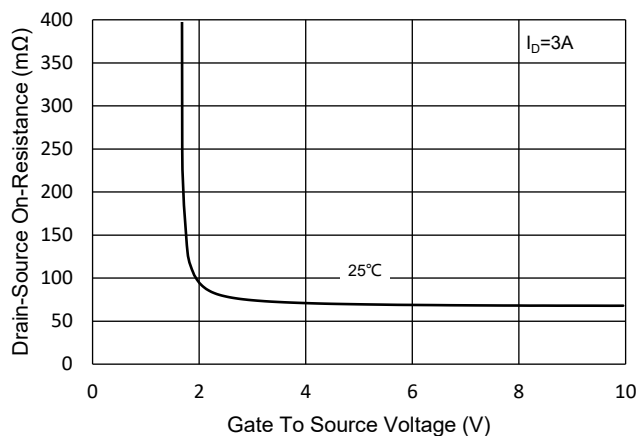
**Fig.1 - Typical Output Characteristics**



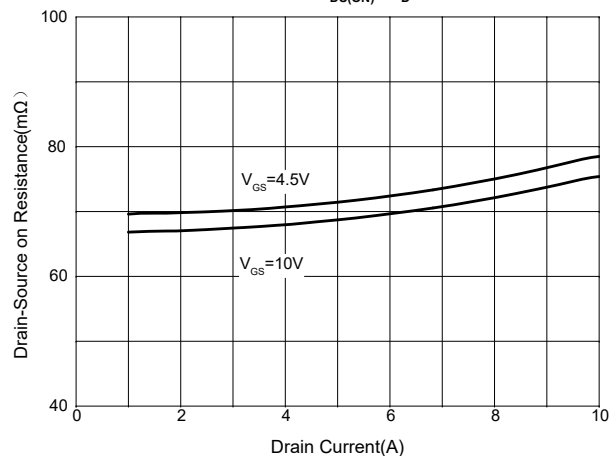
**Fig.2 - Transfer Characteristic**



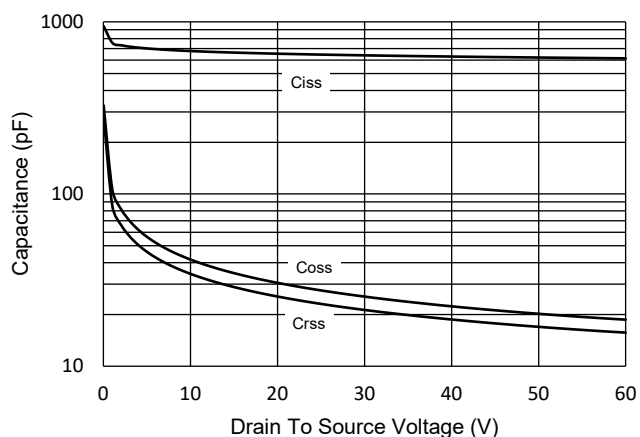
**Fig.3 -  $R_{DS(ON)} - V_{GS}$**



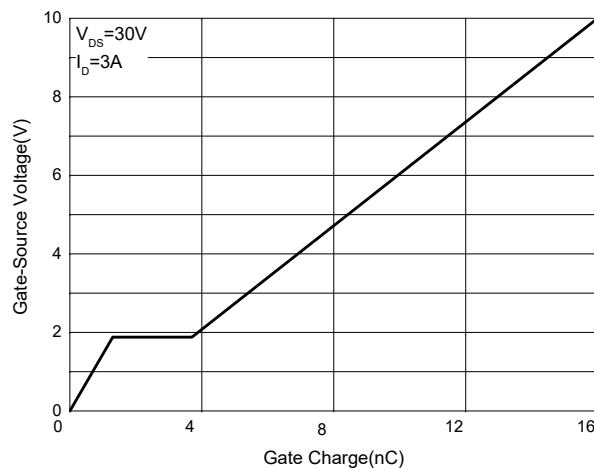
**Fig. 4 -  $R_{DS(ON)} - I_D$**



**Fig.5 - Capacitance Characteristics**

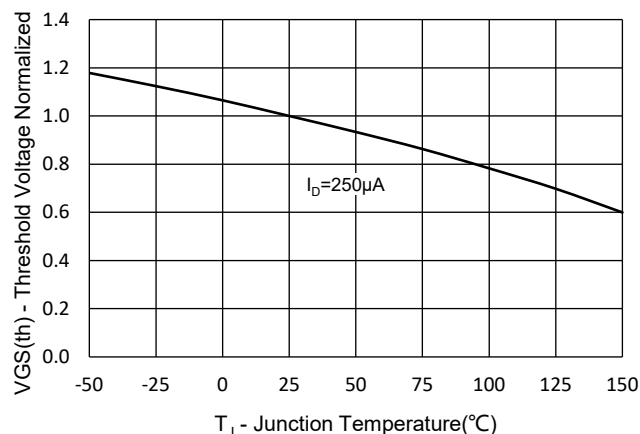


**Fig. 6 - Gate Charge**

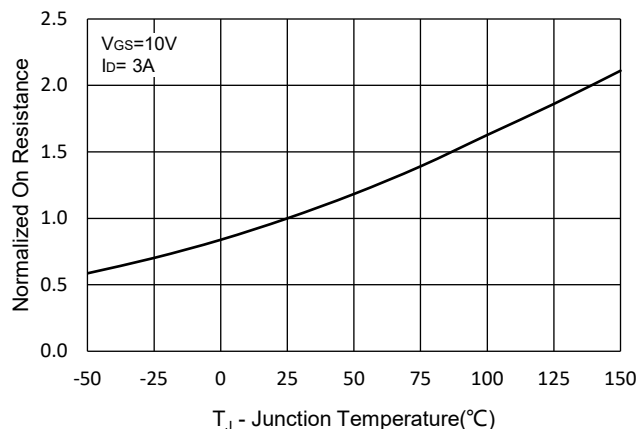


## Curve Characteristics

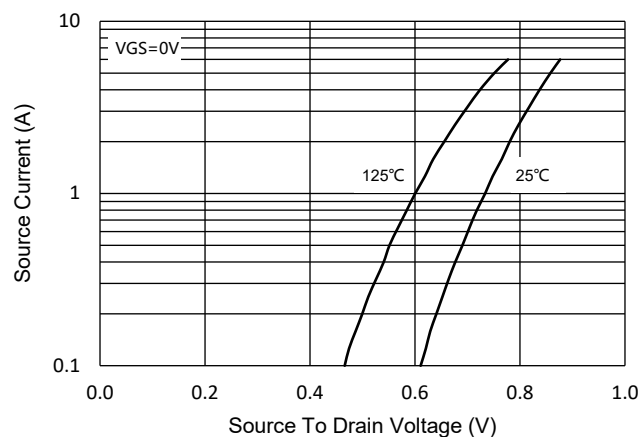
**Fig.7 - Normalized Threshold Voltage**



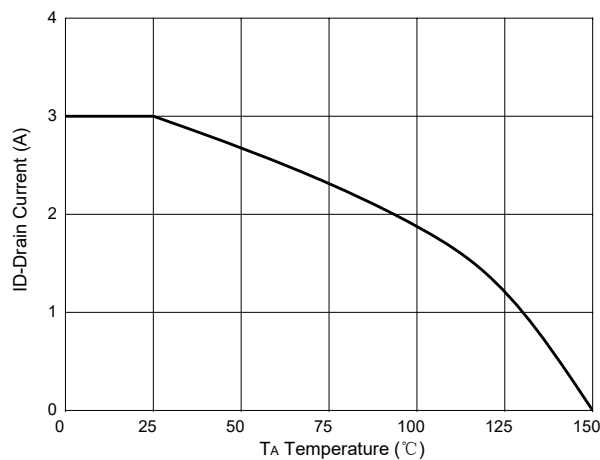
**Fig.8 - Normalized On Resistance Characteristics**



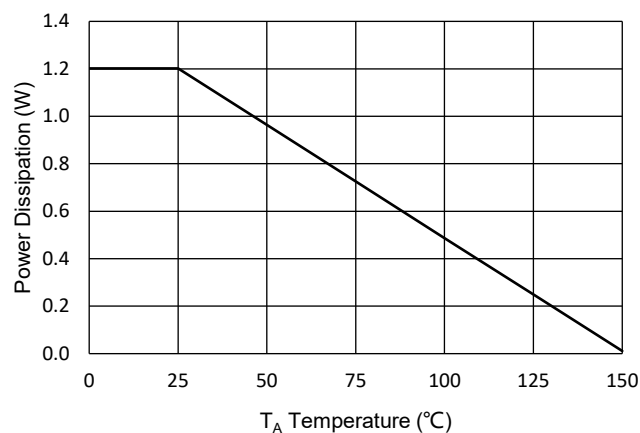
**Fig.9 -  $I_S$  -  $V_{SD}$**



**Fig. 10 - Drain Current**

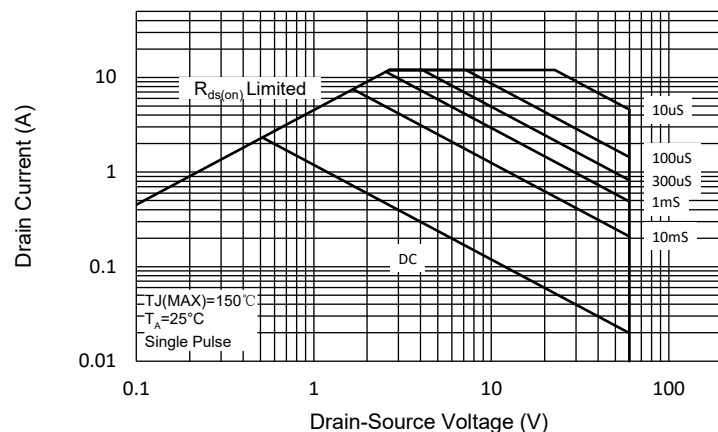


**Fig.11 - PD Dissipation**

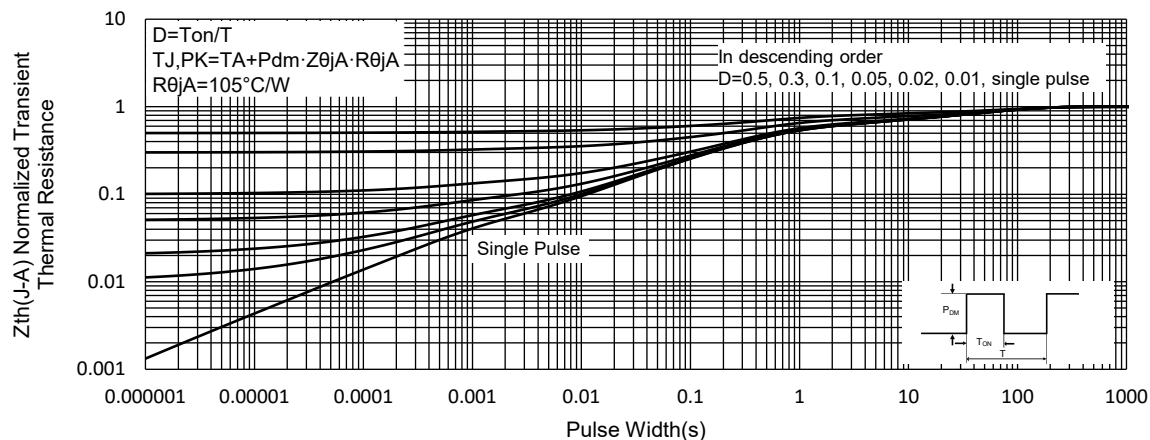


## Curve Characteristics

**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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