

### Features

- ESD Protected up to 2KV(HBM)
- 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)

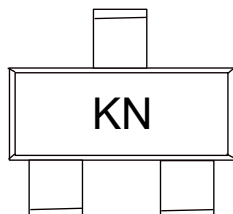
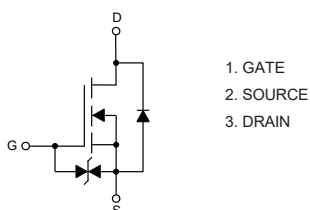
### Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 436°C/W Junction to Ambient(Note 2)

Parameter	Symbol	Rating	Unit
Drain -source Voltage	$V_{DS}$	30	V
Gate -Source Voltage	$V_{GS}$	±20	V
Drain Current-Continuous	$I_D$	$T_A=25^\circ\text{C}$	100
		$T_A=100^\circ\text{C}$	63
Pulsed Drain Current(Note 3)	$I_{DM}$	400	mA
Power Dissipation(Note 4)	$P_D$	0.29	W

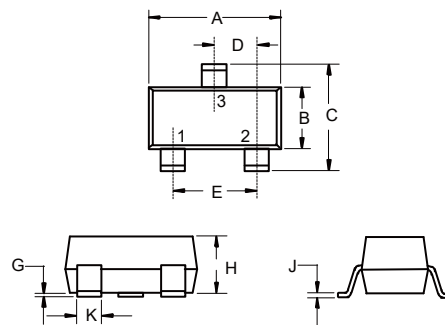
- Note:
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air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



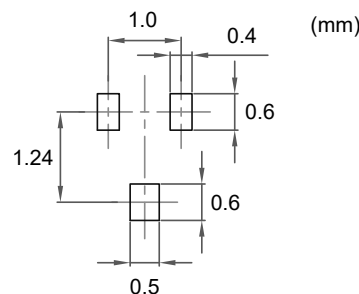
## N-Channel MOSFET

### SOT-523



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.059	0.067	1.50	1.70	
B	0.030	0.033	0.75	0.85	
C	0.057	0.069	1.45	1.75	
D	0.020		0.50		TYP.
E	0.035	0.043	0.90	1.10	
G	0.000	0.004	0.00	0.10	
H	0.024	0.031	0.60	0.80	
J	0.004	0.008	0.10	0.20	
K	0.006	0.014	0.15	0.35	

### Suggested Solder Pad Layout

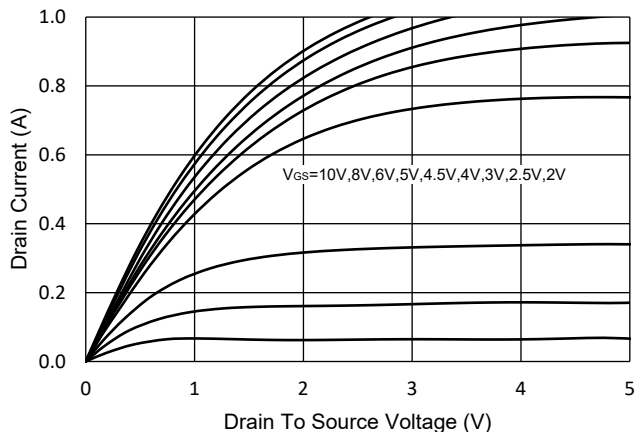


**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

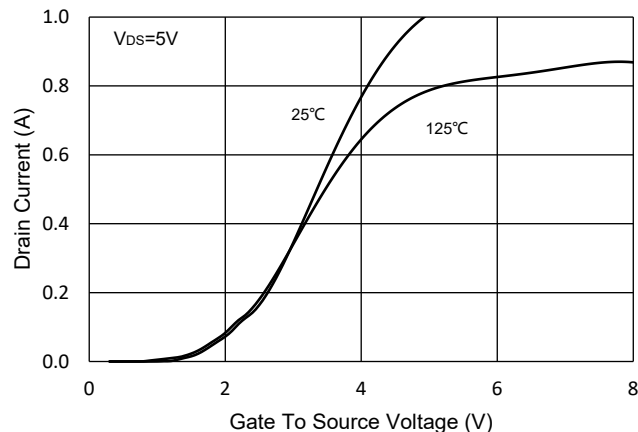
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	1	1.5	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 2$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			100	nA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=500mA$		1.8	4	$\Omega$
		$V_{GS}=4.5V, I_D=200mA$		2	5	
		$V_{GS}=2.5V, I_D=50mA$		4	13	
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=100mA$		200		mS
Gate Resistance	$R_g$	f=1 MHz, Open drain		255		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				0.1	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=500mA$			1.4	V
Reverse Recovery Time	$t_{rr}$	$I_F=0.3A, dI_F/dt=100A/\mu s$		11		ns
Reverse Recovery Charge	$Q_{rr}$			3		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		16		$\mu F$
Output Capacitance	$C_{oss}$			5.4		
Reverse Transfer Capacitance	$C_{rss}$			3.3		
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=0.3A$		0.78		nC
Gate-Source Charge	$Q_{gs}$			0.13		
Gate-Drain Charge	$Q_{gd}$			0.14		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, V_{GS}=10V, R_G=3.9\Omega, I_D=0.3A$		2.4		ns
Turn-On Rise Time	$t_r$			2.7		
Turn-Off Delay Time	$t_{d(off)}$			6		
Turn-Off Fall Time	$t_f$			10		

## Curve Characteristics

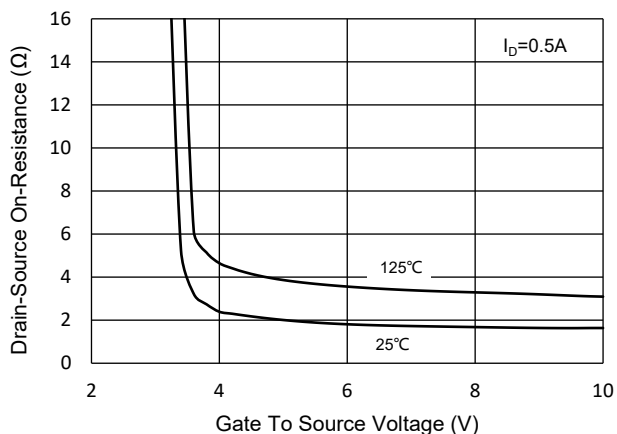
**Fig.1 - Typical Output Characteristics**



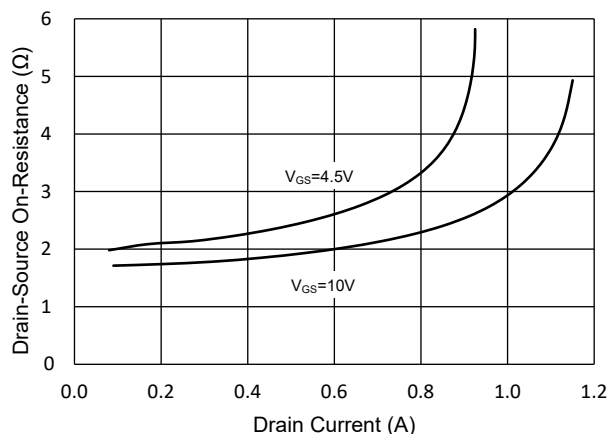
**Fig.2 - Transfer Characteristic**



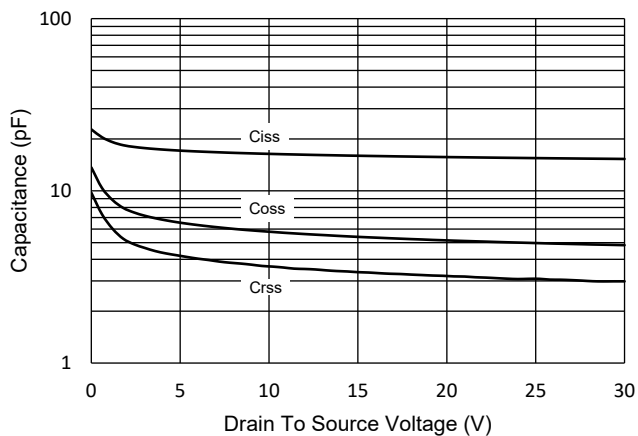
**Fig.3 -  $R_{DS(ON)}$  -  $V_{GS}$**



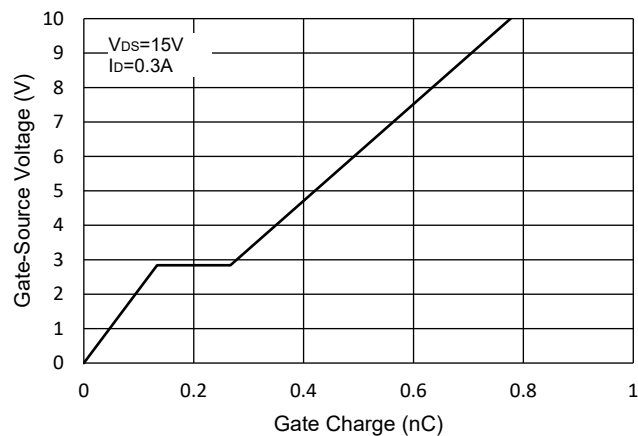
**Fig.4 -  $R_{DS(ON)}$  -  $I_D$**



**Fig.5 - Capacitance Characteristics**



**Fig.6 - Gate Charge**



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

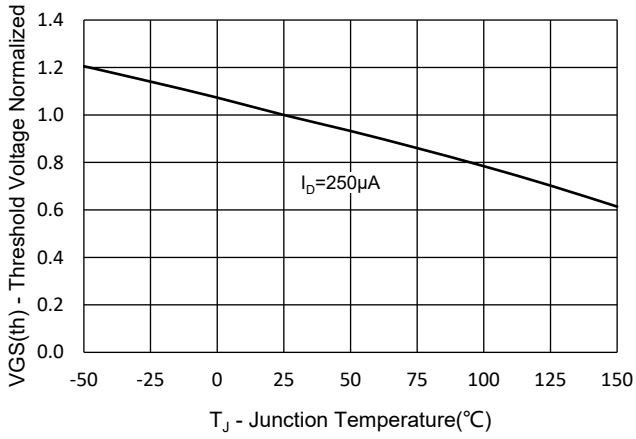


Fig.8 - Normalized On Resistance Characteristics

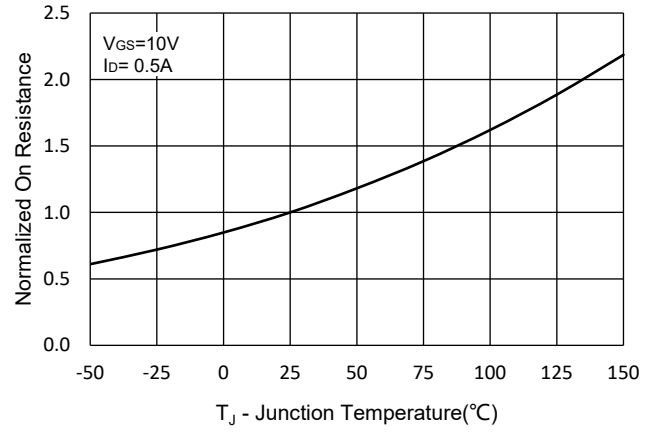


Fig.9 - I<sub>S</sub> - V<sub>SD</sub>

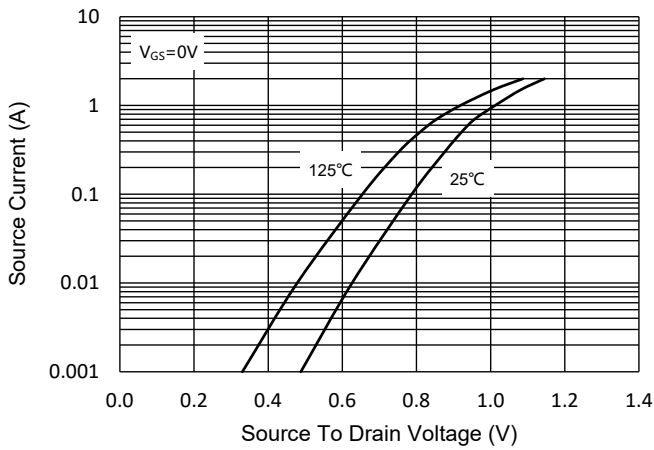


Fig.10 - Drain Current

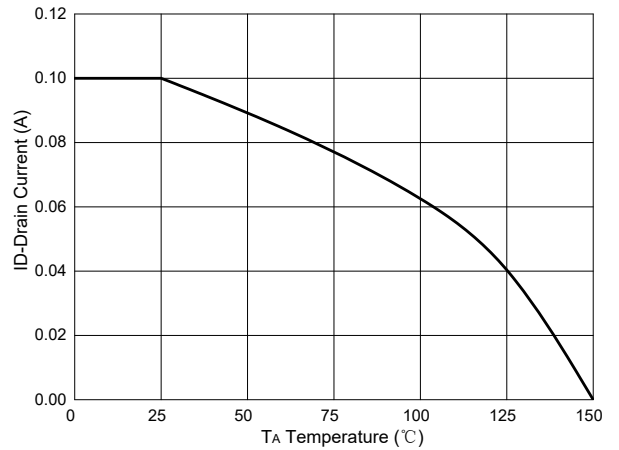
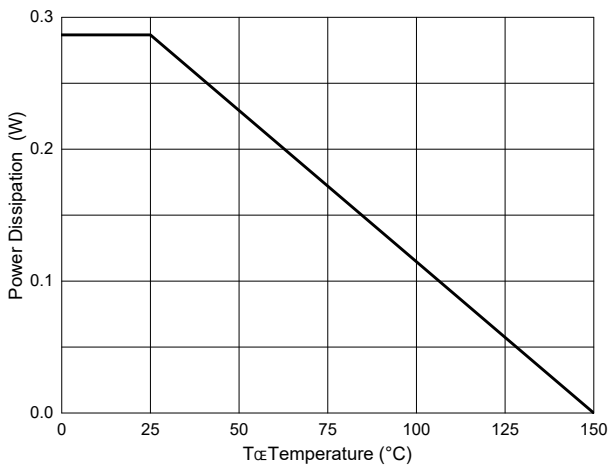


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

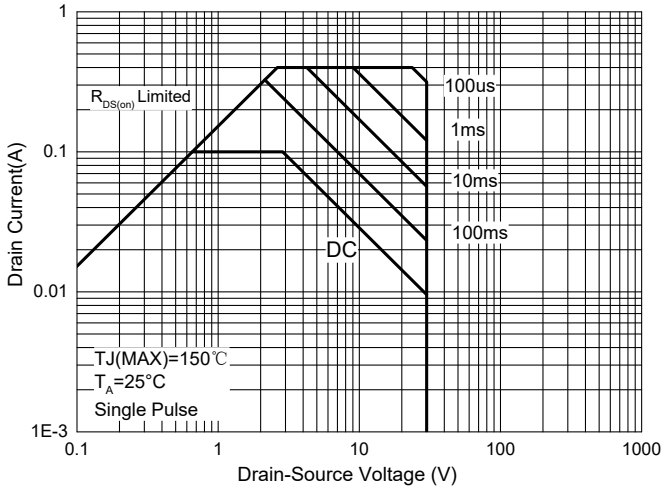
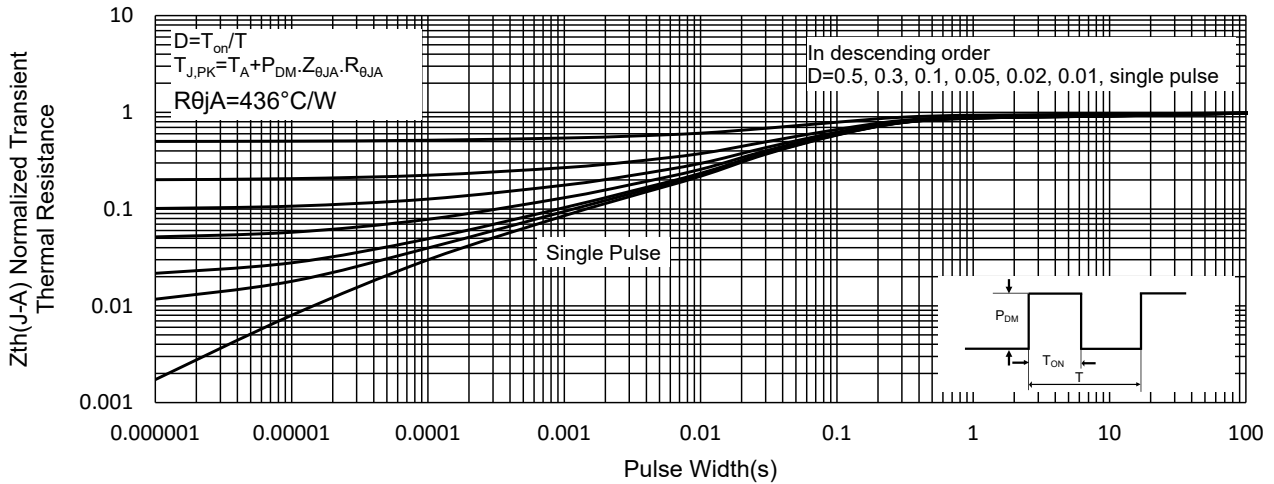


Fig.13 - Normalized Transient Thermal Impedance



## Ordering Information

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

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