

## Features

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

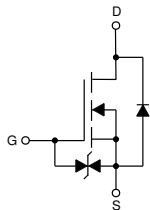
## Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 833°C/W Junction to Ambient
- Thermal Resistance: 455°C/W Junction to Case

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	20	V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V	
Continuous Drain Current	$I_D$	0.5	A	
Pulsed Drain Current (Note 2)	$I_{DM}$	1	A	
Total Power Dissipation	$T_A=25^\circ\text{C}$ (Note 3)	$P_D$	150	mW
	$T_C=25^\circ\text{C}$ (Note 4)		275	mW

- 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. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.  
 3. This Test is Performed with no Heat Sink at  $T_A=25^\circ\text{C}$ .  
 4. This Test is Performed with Infinite Heat Sink at  $T_C=25^\circ\text{C}$ .

## Internal Structure

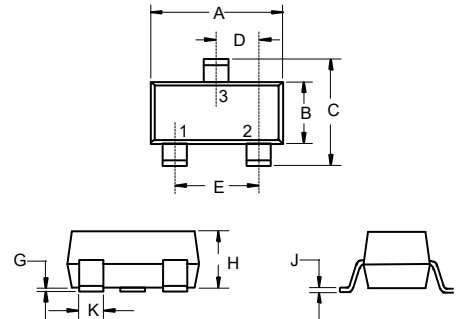


1. GATE
2. SOURCE
3. DRAIN

**Marking: C**

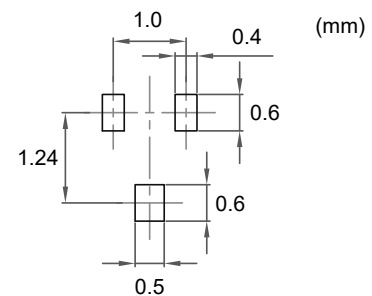
# N-CHANNEL MOSFET

## SOT-523



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 4.5V$			$\pm 1$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=16V, V_{GS}=0V$			100	nA
Gate-Threshold Voltage <sup>(Note 5)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.45	0.8	1.2	V
Drain-Source On-Resistance <sup>(Note 5)</sup>	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=600mA$		250	700	m $\Omega$
		$V_{GS}=2.5V, I_D=500mA$		330	850	
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=400mA$		1		S
<b>Dynamic Characteristics<sup>(Note 6)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=16V, V_{GS}=0V, f=1MHz$		100		pF
Output Capacitance	$C_{oss}$			16		
Reverse Transfer Capacitance	$C_{rss}$			12		
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V, I_D=250mA$		750		nC
Gate-Source Charge	$Q_{gs}$			75		
Gate-Drain Charge	$Q_{gd}$			225		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V,$ $R_L=47\Omega, I_D=200mA,$ $V_{GS}=4.5V, R_G=10\Omega$		5		ns
Turn-On Rise Time	$t_r$			5		
Turn-Off Delay Time	$t_{d(off)}$			25		
Turn-Off Fall Time	$t_f$			11		
<b>Drain-Source Body Diode Characteristics</b>						
Body Diode Voltage <sup>(Note 5)</sup>	$V_{SD}$	$I_S=0.15A, V_{GS}=0V$			1.2	V

Note 5. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 0.5\%$ .

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

## Curve Characteristics

Fig. 1 - Output Characteristics

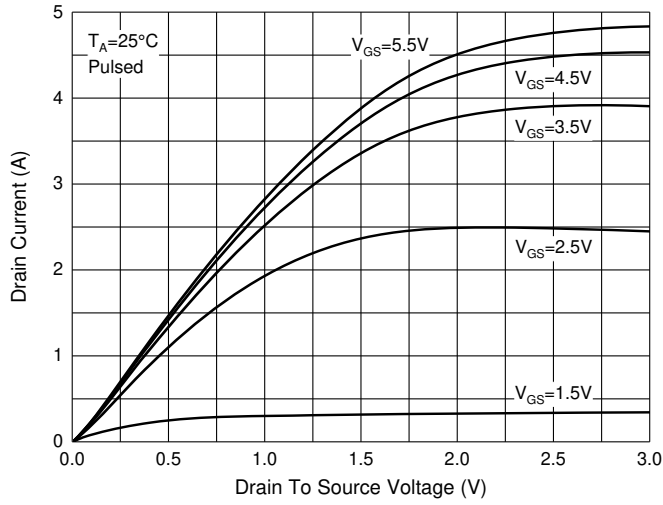


Fig. 2 - Transfer Characteristics

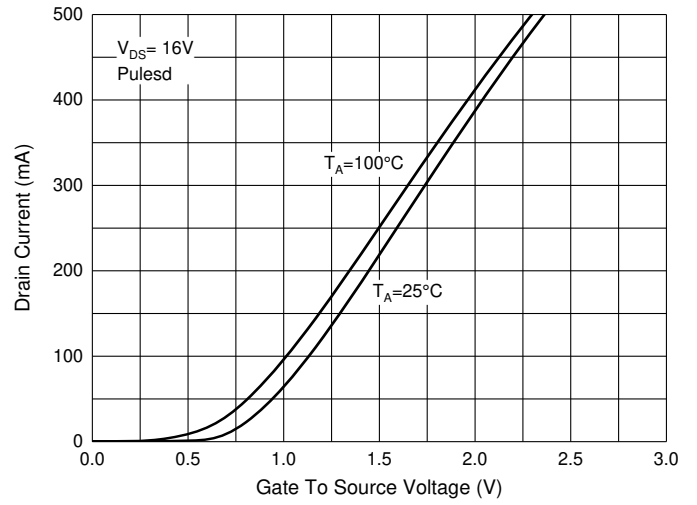


Fig. 3 -  $R_{DS(ON)} - I_D$

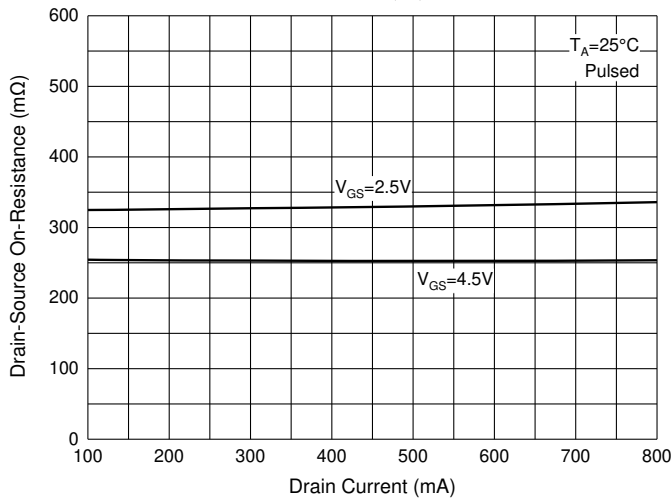


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

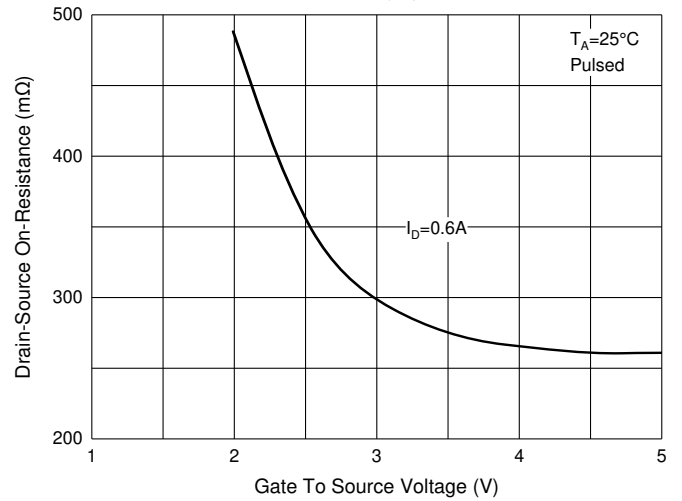


Fig. 5 -  $I_S - V_{SD}$

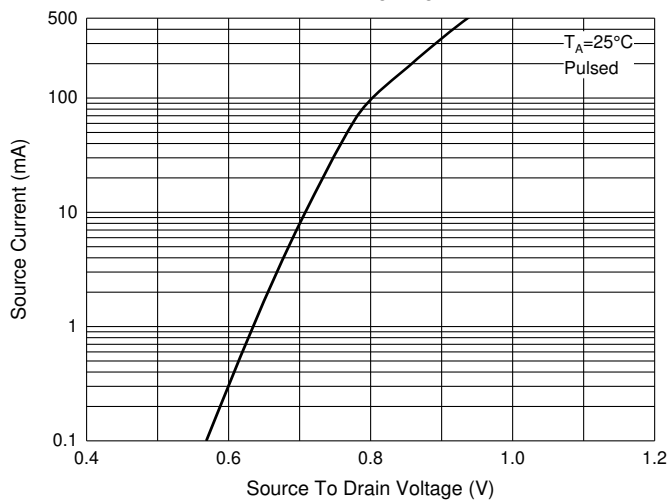
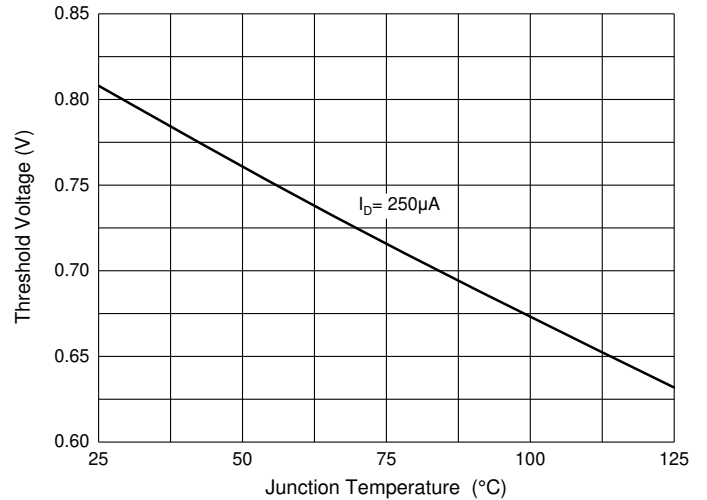


Fig. 6 - Threshold Voltage



## Ordering Information

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

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