

## Features

- Low On-Resistance
- Fast Switching Speed
- 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
- Maximum Thermal Resistance: 695°C/W Junction to Ambient

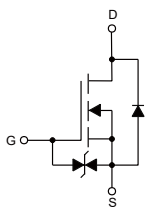
Parameter	Symbol	Rating	Unit
Drain -source Voltage	$V_{DS}$	20	V
Gate -Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous	$I_D$	0.75	A
Pulsed Drain Current <sup>(Note 2)</sup>	$I_{DM}$	3.0	A
Power Dissipation <sup>(Note 3)</sup>	$P_D$	0.18	W

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

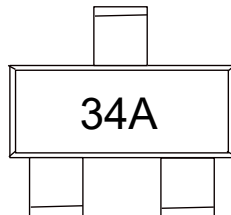
2. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. This test is performed with no heat sink at  $T_a=25^\circ\text{C}$ .

## Internal Structure and Marking Code

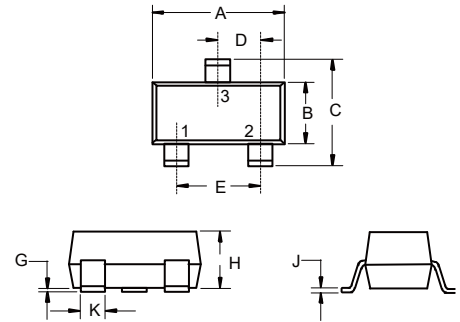


1. GATE
2. SOURCE
3. DRAIN



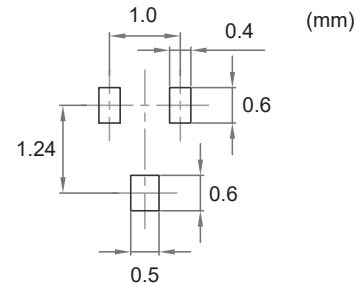
## N-Channel MOSFET

### 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 (Ta=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	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 10V$			$\pm 10$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage <sup>(Note4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.7	1.1	V
Drain-Source On-Resistance <sup>(Note4)</sup>	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=500mA$			300	m $\Omega$
		$V_{GS}=2.5V, I_D=400mA$			400	
		$V_{GS}=1.8V, I_D=200mA$			700	
Diode Forward Voltage <sup>(Note4)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=500mA$			1.2	V
<b>Dynamic Characteristics<sup>(Note5,6)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=16V, V_{GS}=0V, f=1MHz$		33		pF
Output Capacitance	$C_{oss}$			20		
Reverse Transfer Capacitance	$C_{rss}$			10		
Total Gate Charge	$Q_g$	$V_{GS}=4.5V, V_{DS}=10V, I_D=1A$		800		pC
Gate-Source Charge	$Q_{gs}$			290		
Gate-Drain Charge	$Q_{gd}$			160		
Reverse Recovery Charge	$Q_{rr}$	$I_F=0.5A, di/dt=20A/us$		400		ns
Reverse Recovery Time	$t_{rr}$			14.4		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DS}=10V, I_{DS}=0.5A, R_G=10\Omega$		4		ns
Turn-On Rise Time	$t_r$			18		
Turn-Off Delay Time	$t_{d(off)}$			11.6		
Turn-Off Fall Time	$t_f$			24		

Note 4. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

5. Switching characteristics are independent of operating junction temperature.

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

Curve Characteristics

Fig. 1 - Output Characteristics

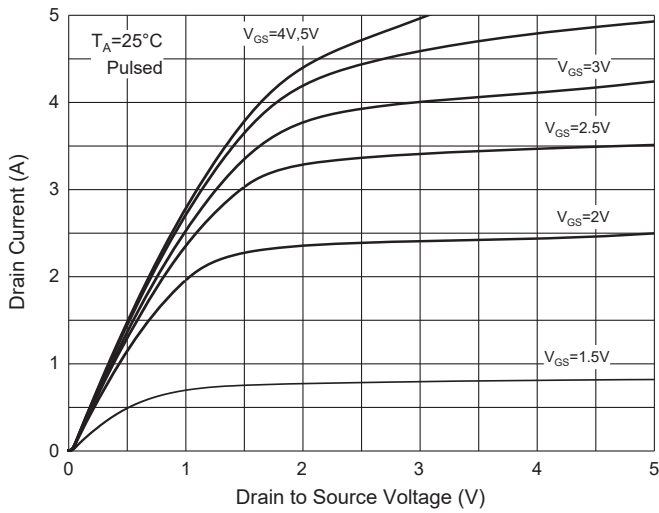


Fig. 2 - Transfer Characteristics

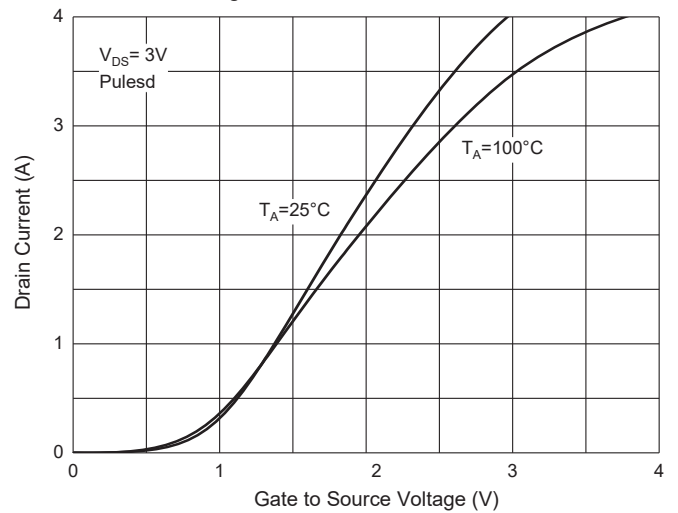


Fig. 3 -  $R_{DS(ON)} - I_D$

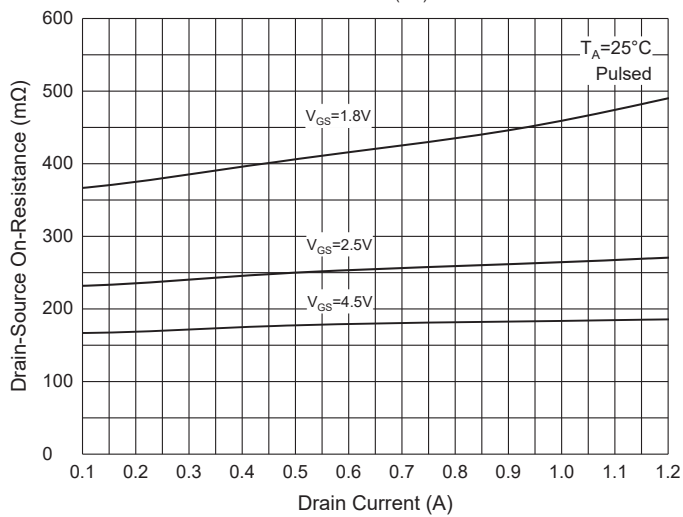


Fig. 4 - Threshold Voltage

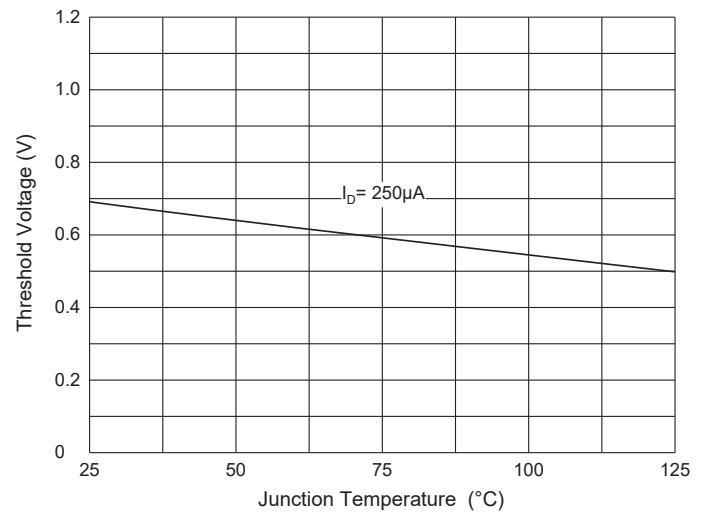


Fig. 5 - Gate Charge

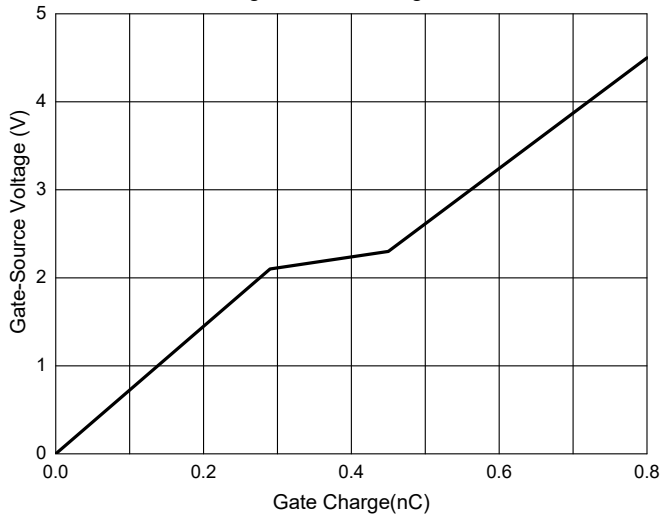


Fig. 6 - Capacitance Characteristics

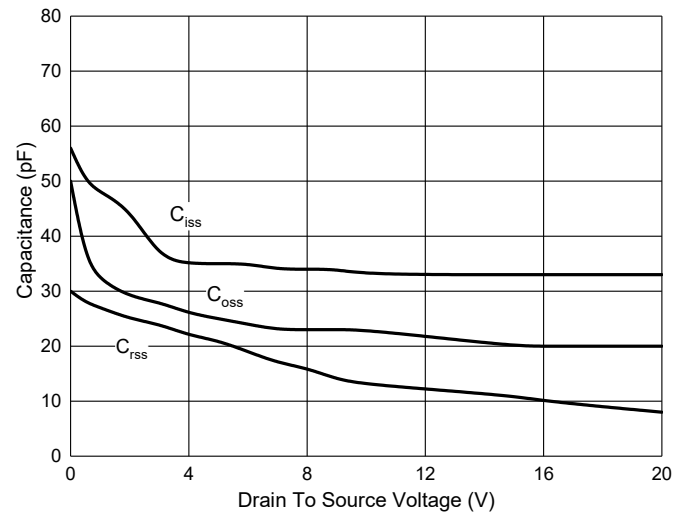


Fig. 7 - Normalized On Resistance Characteristics

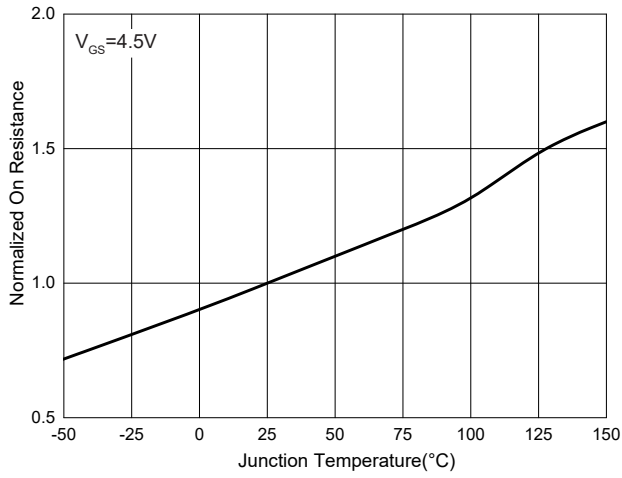


Fig. 8 -  $I_S - V_{SD}$

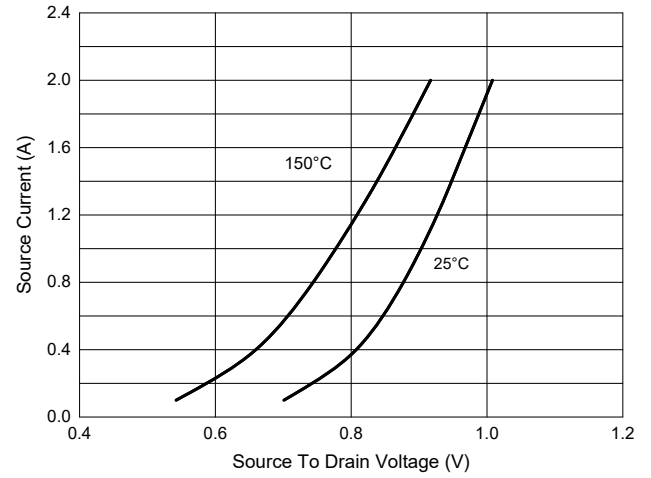


Fig. 9 -  $R_{DS(ON)} - V_{GS}$

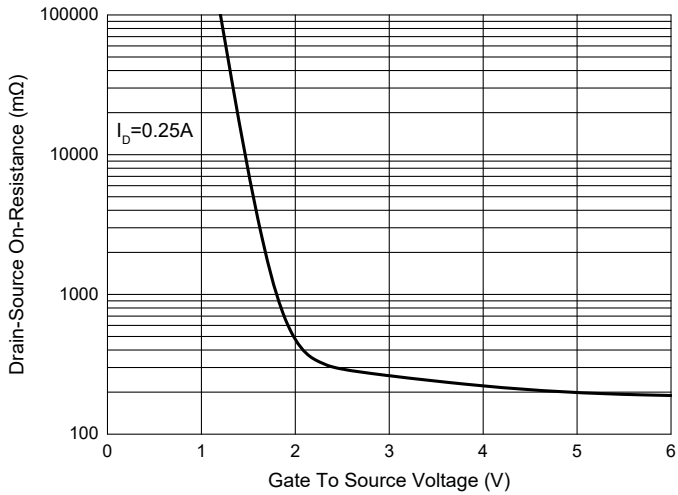
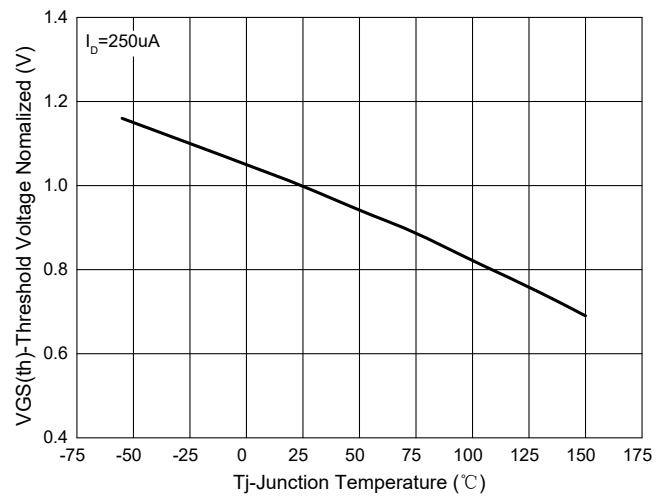


Fig. 10 - Normalized Threshold voltage



## Ordering Information

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

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