

### Features

- ESD Protected up to 2KV (HBM)
- Operated at Low Logic Level Gate Drive
- P-Channel Switch with Low  $R_{DS(on)}$
- 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)

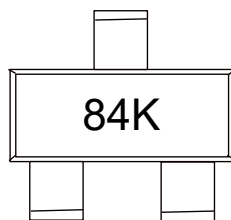
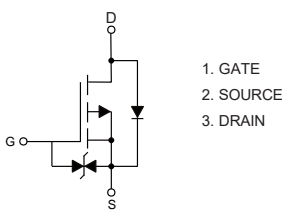
### Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 461°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit	
Drain -source Voltage	$V_{DS}$	-60	V	
Gate -Source Voltage	$V_{GS}$	±20	V	
Continuous Drain Current	$T_A=25^\circ\text{C}$	$I_D$	-0.26	A
	$T_A=100^\circ\text{C}$		-0.16	A
Plused Drain Current (Note2)	$I_{DM}$	-1.04	A	
Power Dissipation (Note3)	$P_D$	0.27	W	

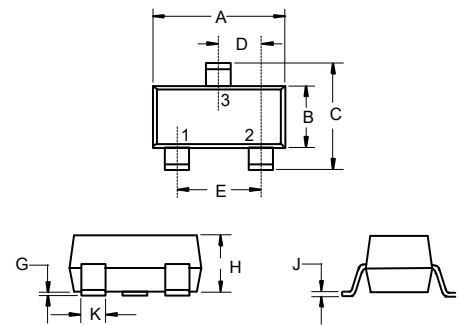
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.  
 2. Repetitive rating: Pulse width limited by junction temperature.  
 3. Surface mounted on FR4 board,  $t \leq 10s$ .

### Internal Structure and Marking Code



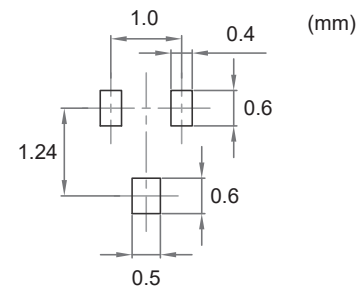
## P-Channel MOSFET

### 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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-2	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 10$	$\mu A$
Drain Leakage Current	$I_{DSS}$	$V_{DS}=-48V, V_{GS}=0V$			-1	$\mu A$
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-0.2A$		2.2	6	$\Omega$
		$V_{GS}=-4.5V, I_D=-0.1A$		2.5	7	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-0.2A$			-1.3	V
<b>Dynamic Characteristics<sup>(Note 4)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$		32		pF
Output Capacitance	$C_{oss}$			2.3		
Reverse Transfer Capacitance	$C_{rss}$			1.6		
Total Gate Charge	$Q_g$	$V_{DS}=-30V, V_{GS}=-10V, I_D=-0.2A$		1.6		nC
Gate-Source Charge	$Q_{gs}$			0.4		
Gate-Drain Charge	$Q_{gd}$			0.2		
<b>Switching Characteristics<sup>(Note 5)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-30V, V_{GEN}=-10V, R_G=3.9\Omega, R_L=150\Omega, I_{DS}=-0.2A$		5.5		ns
Turn-On Rise Time	$t_r$			4.8		
Turn-Off Delay Time	$t_{d(off)}$			27		
Turn-Off Fall Time	$t_f$			19		

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

5. Guaranteed by design, not subject to production.

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

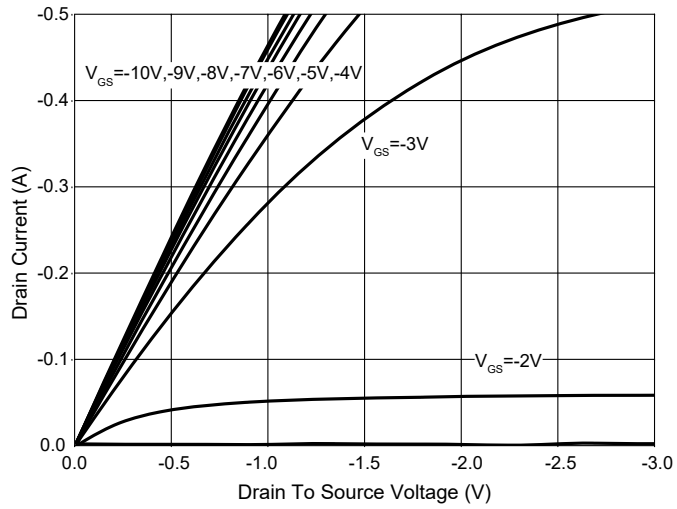


Fig. 2 -  $R_{DS(ON)} - I_D$

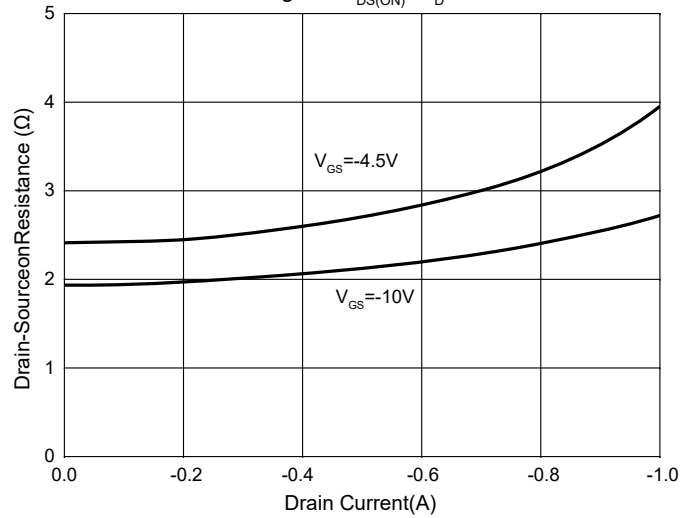


Fig. 3 - Normalized Threshold Voltage

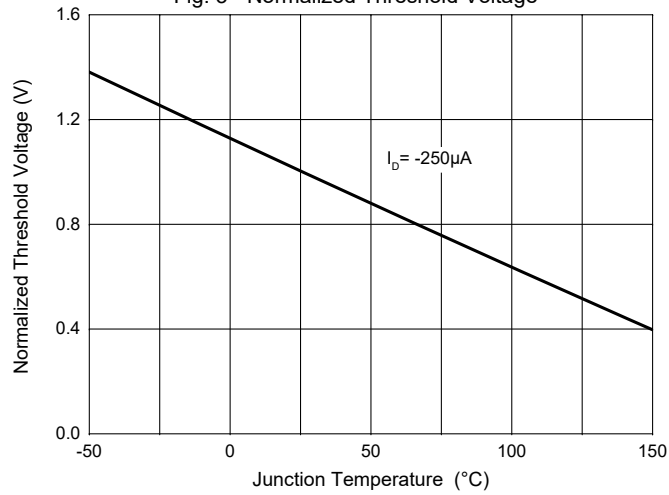


Fig. 4 -  $I_S - V_{SD}$

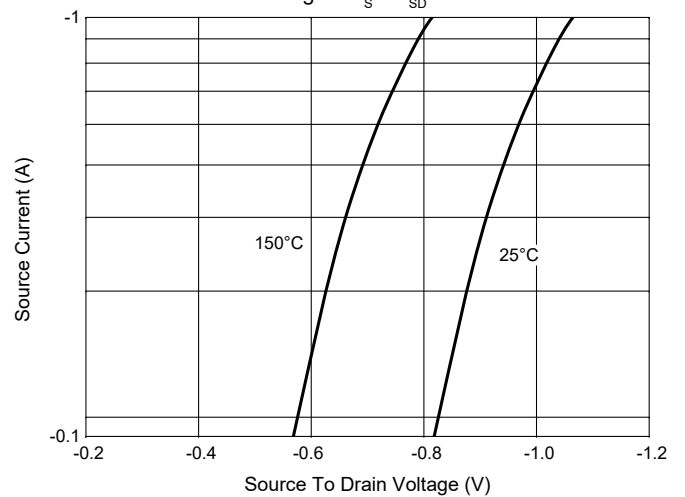


Fig.5 - Normalized On Resistance Characteristics

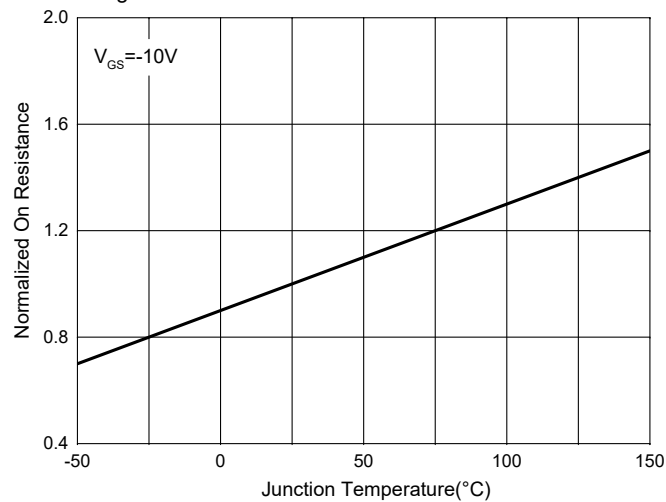
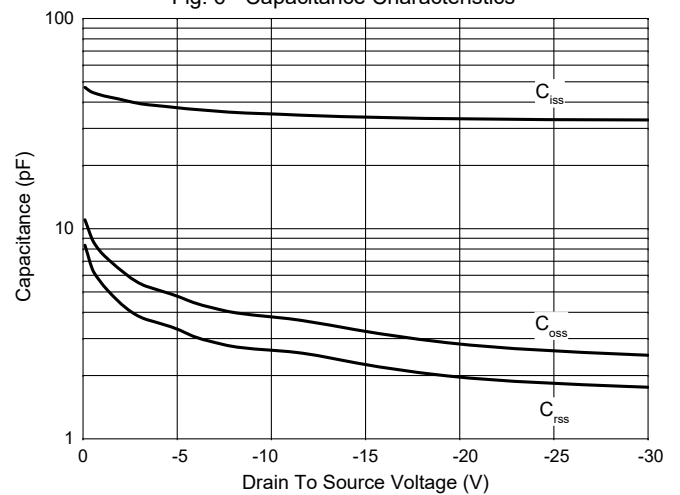


Fig. 6 - Capacitance Characteristics



**Curve Characteristics**

Fig. 7 - Gate Charge

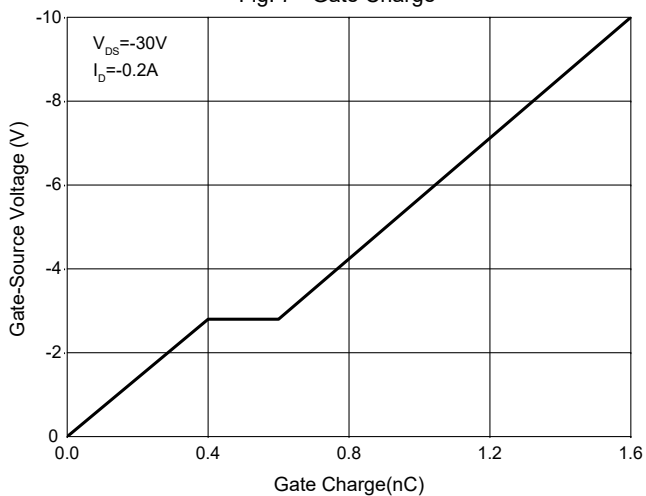


Fig. 8 - Safe Operation Area

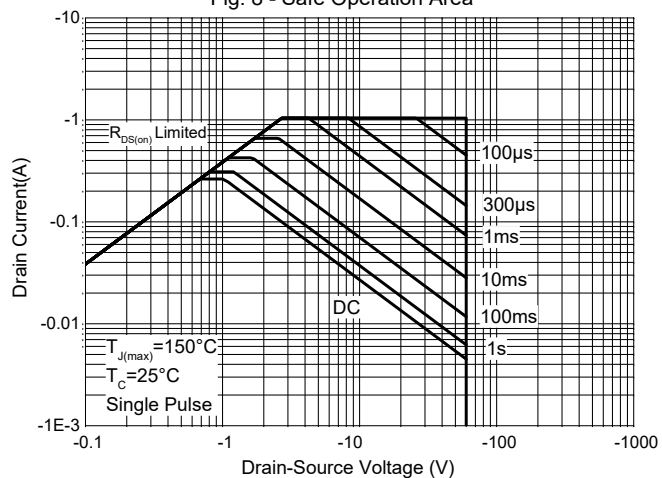
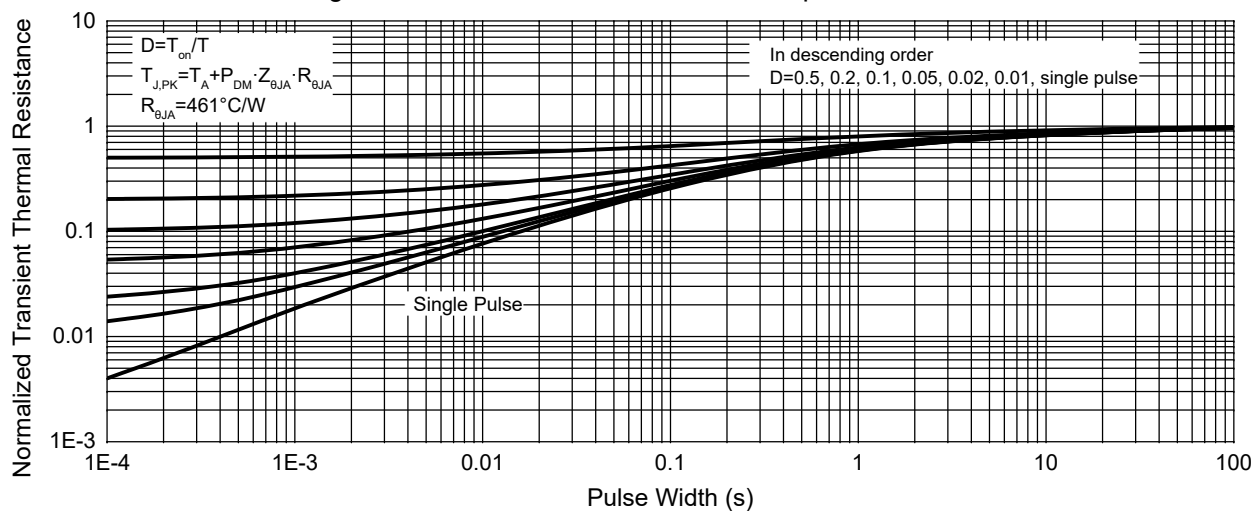


Fig. 9 - Normalized Transient Thermal Impedance



## Ordering Information

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

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