

**Features**

- High Density Cell Design for Ultra Low  $R_{DS(on)}$
- Rugged and Reliable
- 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)

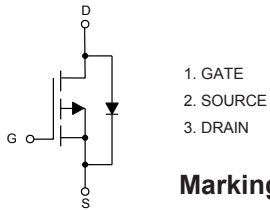
**Maximum Ratings**

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 556°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	±30	V
Continuous Drain Current	$I_D$	-0.17	A
Pulsed Drain Current	$I_{DM}$	-0.68	A
Total Power Dissipation	$P_D$	225	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.

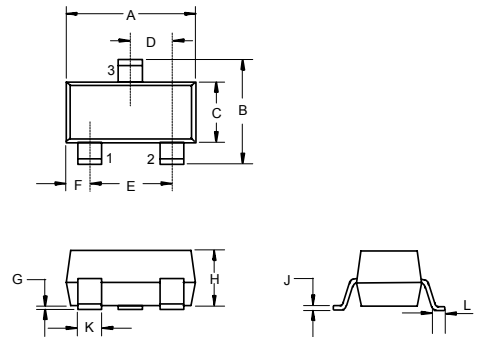
**Internal Structure**



**Marking: B84**

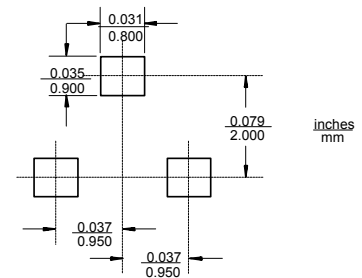
**P-CHANNEL  
MOSFET**

**SOT-23**



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
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 30V$			$\pm 500$	nA
		$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-60V, V_{GS}=0V$			-5	$\mu A$
		$V_{DS}=-25V, V_{GS}=0V$			-0.1	$\mu A$
Gate-Threshold Voltage <sup>(Note 2)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.9		-2	V
Drain-Source On-Resistance <sup>(Note2)</sup>	$R_{DS(on)}$	$V_{GS}=-5V, I_D=-0.1A$			10	$\Omega$
		$V_{GS}=-10V, I_D=-0.1A$			8	
Diode Forward Voltage <sup>(Note 2)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=-0.17A$			-2.2	V
Forward Transconductance <sup>(Note 2)</sup>	$g_{FS}$	$V_{DS}=-25V, I_D=-100mA$	50			mS
<b>Dynamic Characteristics<sup>(Note3)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-25V, V_{GS}=0V, f=1MHz$		30		pF
Output Capacitance	$C_{oss}$			10		
Reverse Transfer Capacitance	$C_{rss}$			5		
<b>Switching Characteristics<sup>(Note3)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V, R_L=50\Omega, I_D=-2.5A$		2.5		ns
Turn-On Rise Time	$t_r$			1		
Turn-Off Delay Time	$t_{d(off)}$			16		
Turn-Off Fall Time	$t_f$			8		

Note: 2. Pulse Test : Pulse Width  $\leq 80\mu s$ , Duty Cycle  $\leq 0.5\%$ .

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

**Curve Characteristics**

Fig. 1 - Output Characteristics

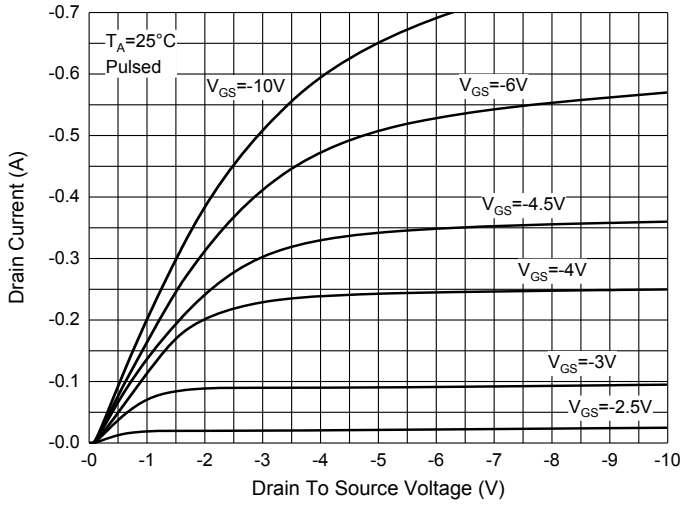


Fig. 2 - Transfer Characteristics

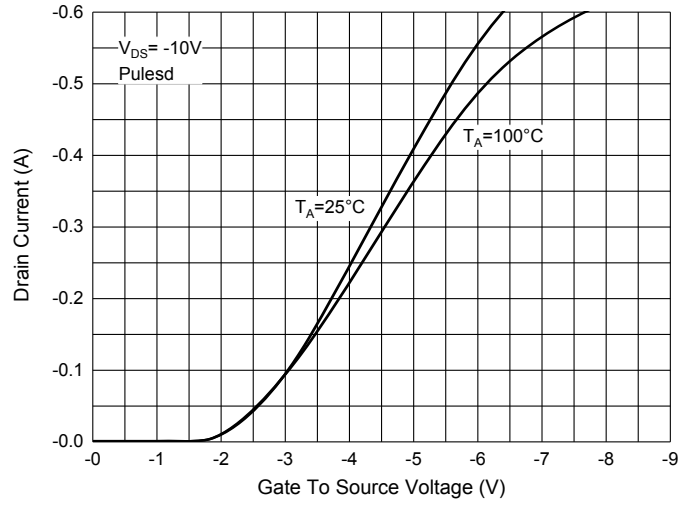


Fig. 3 -  $R_{DS(ON)} - I_D$

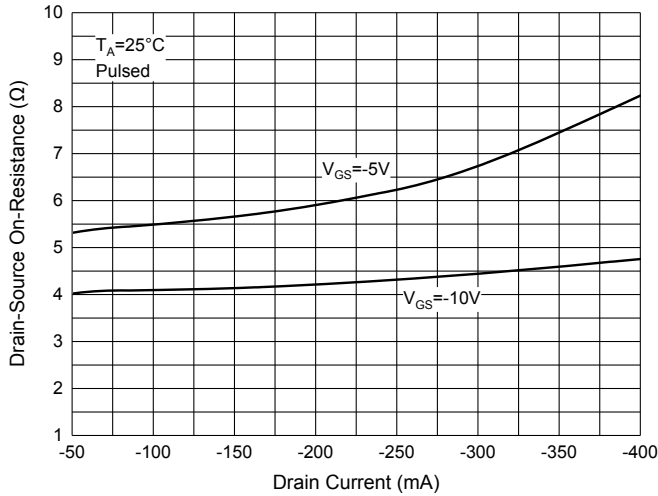


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

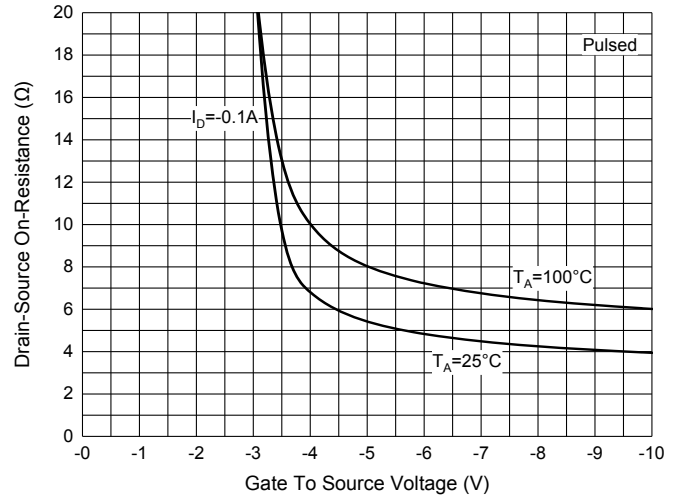


Fig. 5 -  $I_S - V_{SD}$

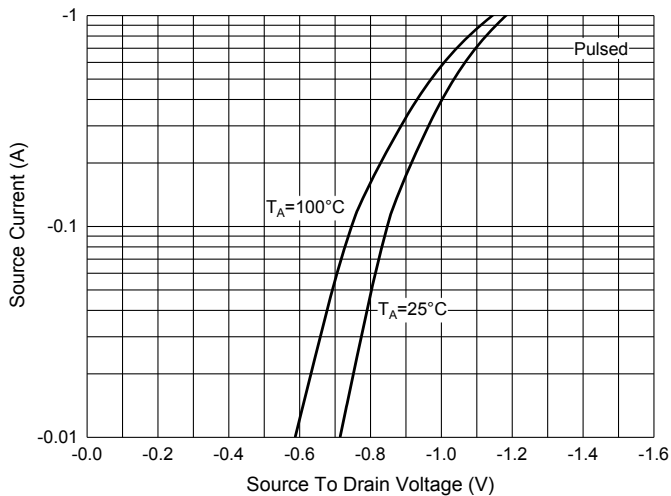
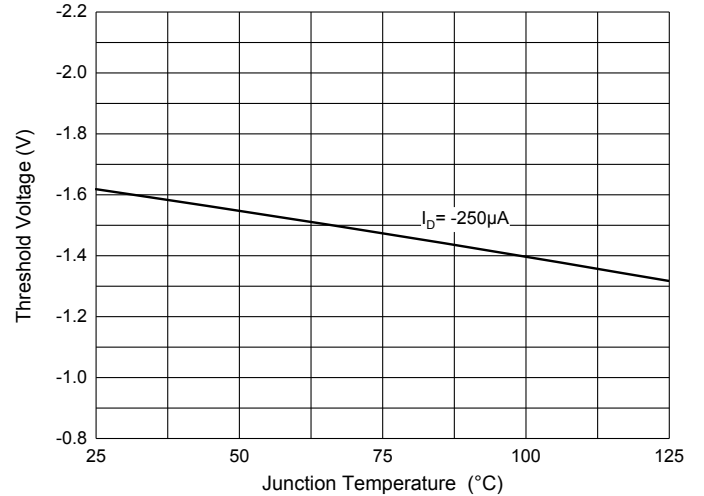


Fig. 6 - Threshold Voltage



## Ordering Information

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

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