

**Features**

- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"

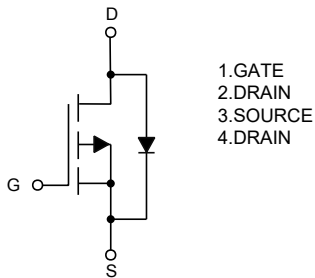
**Maximum Ratings**

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 62.5°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	-60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>(Note 1)</sup>	I <sub>D</sub>	-3.5	A
Pulsed Drain Current <sup>(Note 2)</sup>	I <sub>DM</sub>	-14	A
Total Power Dissipation	P <sub>D</sub>	2.0	W

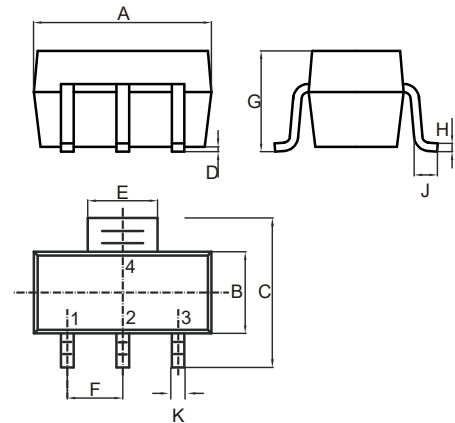
Notes: 1.Surface Mounted on FR4 Board Using the Minimum Recommended Pad Size.  
2. Pulse Test : Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.

**Internal Structure:**



**P-Channel MOSFET**

**SOT-223**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.248	0.264	6.30	6.70	
B	0.130	0.146	3.30	3.70	
C	0.264	0.287	6.70	7.30	
D	0.001	0.004	0.02	0.10	
E	0.114	0.122	2.90	3.10	
F	0.091		2.30		TYP.
G	---	0.071	---	1.80	
H	0.009	0.014	0.23	0.35	
J	0.030	---	0.75	---	
K	0.026	0.033	0.66	0.84	

**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	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-60V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage <sup>(Note 2)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.5	-3	V
Drain-Source On-Resistance <sup>(Note 2)</sup>	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-3.1A$		60	80	m $\Omega$
		$V_{GS}=-4.5V, I_D=-0.2A$		92	100	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-2A$			1.2	V
Forward Transconductance <sup>(Note 2)</sup>	$g_{FS}$	$V_{DS}=-15V, I_D=-3.1A$		8.5		S
<b>Dynamic Characteristics<sup>(Note 3)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		650		pF
Output Capacitance	$C_{oss}$			95		
Reverse Transfer Capacitance	$C_{rss}$			60		
Gate Resistance	$R_g$	$f=1MHz$			20	$\Omega$
<b>Switching Characteristics<sup>(Note 3,4)</sup></b>						
Total Gate Charge	$Q_g$	$V_{DD}=-30V, V_{GS}=-4.5V, I_D=-3.1A$			12	nC
Gate-Source Charge	$Q_{gs}$			2.2		
Gate-Drain Charge	$Q_{gd}$			3.7		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-30V, V_{GEN}=-4.5V, I_D=-2.4A$ $R_L=12.5\Omega, R_G=1\Omega$			45	ns
Turn-On Rise Time	$t_r$				105	
Turn-Off Delay Time	$t_{d(off)}$				60	
Turn-Off Fall Time	$t_f$				45	

Note 3. Switching Characteristics are Independent of Operating Junction Temperature.

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

**Curve Characteristics**

Fig. 1 - Output Characteristics

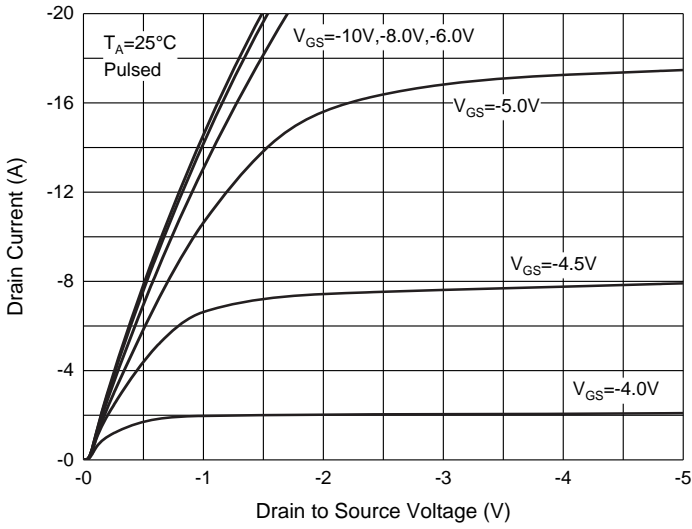


Fig. 2 - Transfer Characteristics

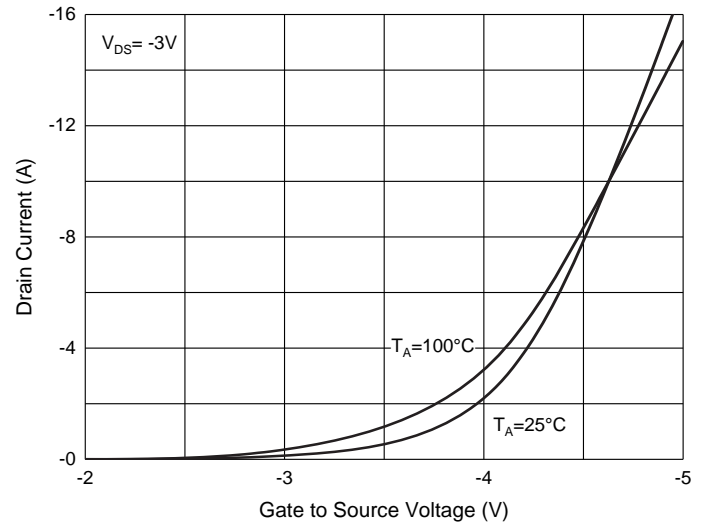


Fig. 3 -  $R_{DS(ON)} - I_D$

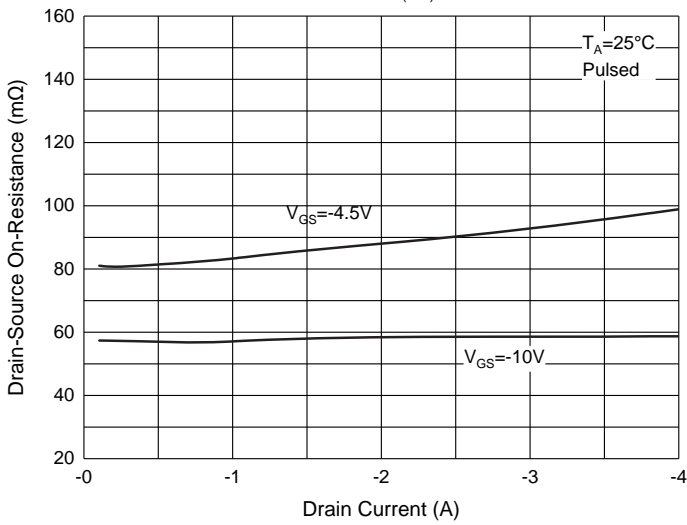


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

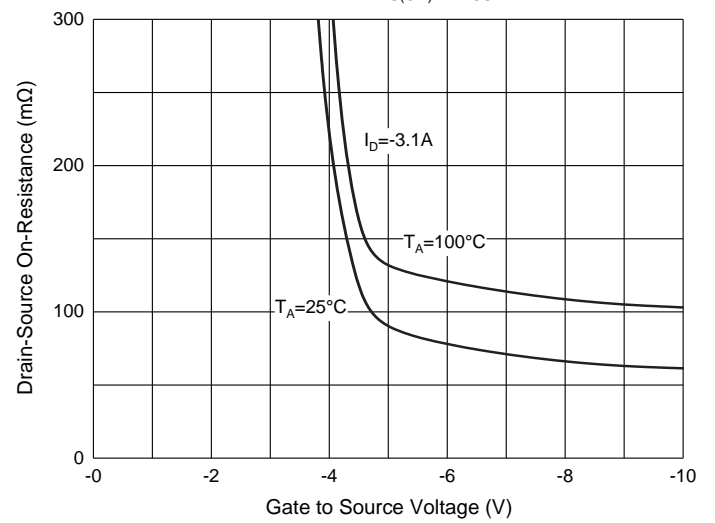
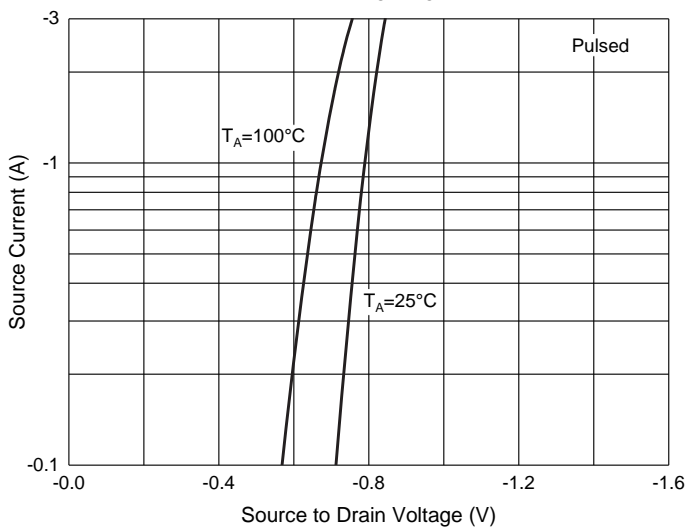


Fig. 5 -  $I_S - V_{SD}$



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2.5Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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