Features

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

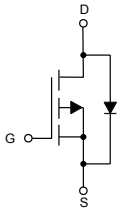
P-Channel MOSFET

Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 90°C/W Junction to Ambient(Note 1)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current-Continuous	I_D	-4.2	A
Drain Current-Pulse(Note 2)	I_{DM}	-21	A
Power Dissipation	P_D	1.4	W

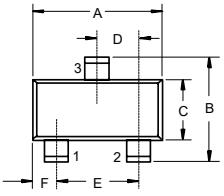
Internal Structure

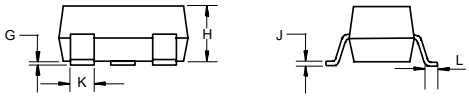


1. GATE
2. SOURCE
3. DRAIN

Marking:$S5_B$

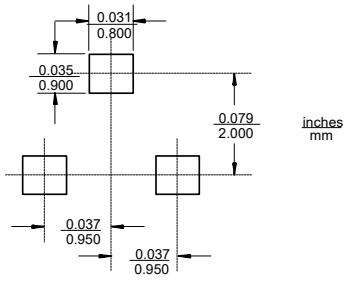
SOT-23





DIMENSIONS					
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 (Ta=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-20			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.5		-0.9	V
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±10V, V_{DS}=0V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-20V, V_{GS}=0V			-1	μA
Drain-Source On-Resistance(Note 3)	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-2.7A		35	60	mΩ
		V_{GS}=-2.5V, I_D=-2.7A		46	80	
		V_{GS}=-1.8V, I_D=-2.7A		90		
Forward Tranconductance(Note 3)	g_{FS}	V_{DS}=-5V, I_D=-4.1A	6			S
Dynamic Characteristics						
Input Capacitance(Note 1,4)	C_{iss}	V_{DS}=-4V,V_{GS}=0V, f=1MHz		740		pF
Output Capacitance(Note 1,4)	C_{oss}			290		
Reverse Transfer Capacitance(Note 1,4)	C_{rss}			190		
Total Gate Charge(Note 1)	Q_g	V_{DS}=-4V,V_{GS}=-4.5V,I_D=-4.1A		7.8	15	nC
		V_{DS}=-4V,V_{GS}=-2.5V,I_D=-4.1A		4.5	9	
Gate-Source Chage(Note 1)	Q_{gs}			1.2		
Gage-Drain Charge(Note 1)	Q_{gd}			1.6		
Gate Resistance(Note 1,4)	R_g	f=1MHz	1.4	7	14	Ω
Turn-On Delay Time(Note 1,4)	$t_{d(on)}$	V_{DD}=-4V,V_{GEN}=-4.5V,R_L=1.2Ω, I_D=-3.3A,R_G=1Ω		13	20	ns
Turn-On Rise Time(Note 1,4)	t_r			35	53	
Turn-Off Delay Time(Note 1,4)	$t_{d(off)}$			32	48	
Turn-Off Fall Time(Note 1,4)	t_f			10	20	
Turn-On Delay Time(Note 1,4)	$t_{d(on)}$	V_{DD}=-4V,V_{GEN}=-8V,R_L=1.2Ω, I_D=-3.3A,R_G=1Ω		5	10	ns
Turn-On Rise Time(Note 1,4)	t_r			11	17	
Turn-Off Delay Time(Note 1,4)	$t_{d(off)}$			22	33	
Turn-Off Fall Time(Note 1,4)	t_f			16	24	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_C=25°C			-4.2	A
Pulse Diode Forward Current(Note 3)	I_{SM}				-10	
Body Diode Voltage	V_{SD}	I_F=-3.3A		-0.8	-1.2	V

Note:
1. Guaranteed by Design,Not Subject to Production Testing.
2. Repetitive Rating: Pulse Width Limited by Max. Junction Temperature.
3. Pulse Test: Pulse Width≤300μs,Duty Cycle≤2%.
4. These Parameters Have No Way to Verify.

Curve Characteristics

Fig. 1 - On-Resistance Characteristics

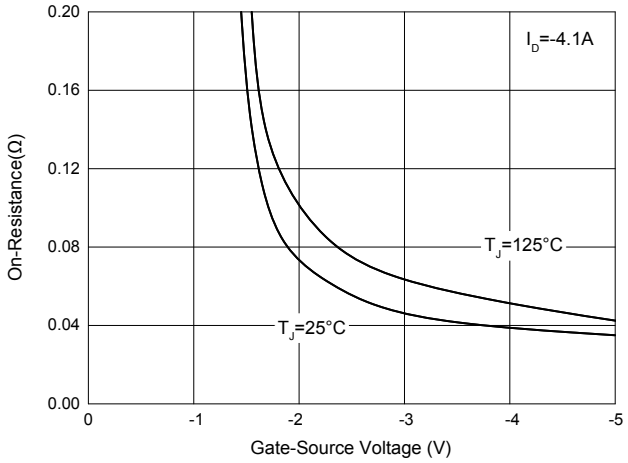


Fig. 2 - Drain Current Characteristics

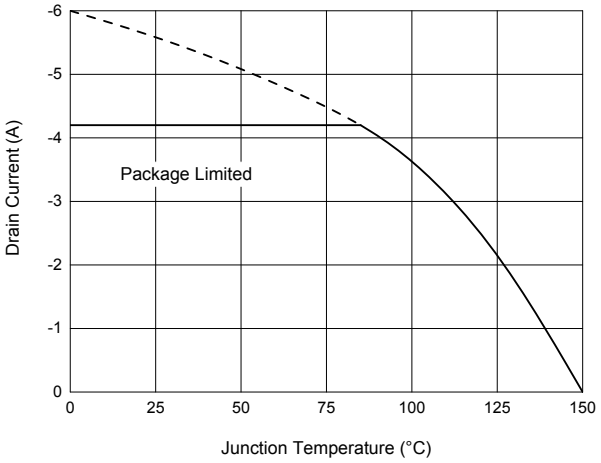


Fig. 3 - Output Characteristics

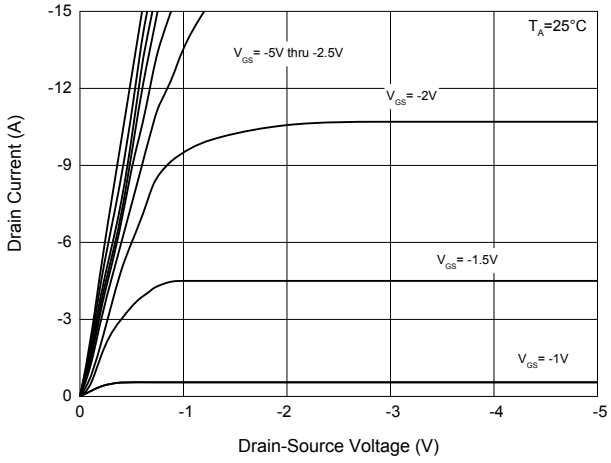
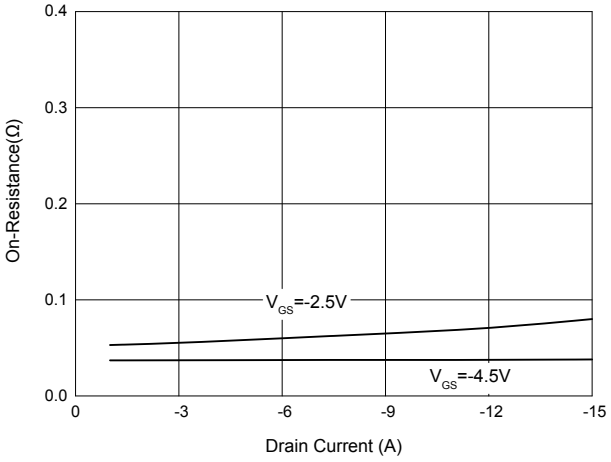


Fig. 4 - On-Resistance Characteristics



Ordering Information

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

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