

Features

- Split Gate Trench MOSFET Technology
- High Density Cell Design For Ultra Low $R_{DS(on)}$
- Moisture Sensitivity Level 1
- Halogen Free."Green"Device^(Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

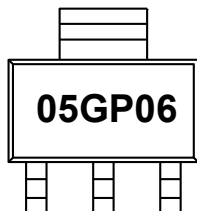
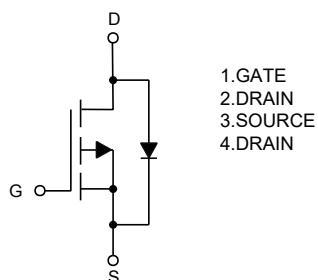
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 125°C/W Junction to Ambient^(Note 2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	A
		$T_A=100^\circ\text{C}$	
Pulsed Drain Current ^(Note 3)	I_{DM}	-20	A
Total Power Dissipation ^(Note 4)	P_D	1	W

Note:

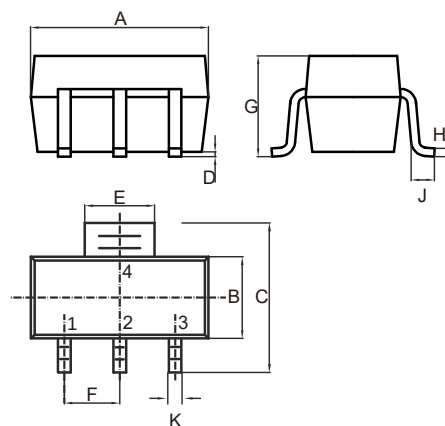
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.

Internal Structure and Marking Code



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
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-60			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.5	-2	-3	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-5A		40	55	mΩ
		V _{GS} =-4.5V, I _D =-4A		50	70	
Gate Resistance	R _g	f=1 MHz, Open drain		12		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				-5	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-5A			-1.2	V
Reverse Recovery Time	t _{rr}	I _F =-5A, dI/dt=100A/μs		20		ns
Reverse Recovery Charge	Q _{rr}			8		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-30V,V _{GS} =0V,f=1MHz		1050		pF
Output Capacitance	C _{oss}			380		
Reverse Transfer Capacitance	C _{rss}			20		
Total Gate Charge	Q _g	V _{DS} =-30V,V _{GS} =-10V,I _D =-5A		19		nC
Gate-Source Charge	Q _{gs}			4.7		
Gate-Drain Charge	Q _{gd}			3		
Turn-On Delay Time	t _{d(on)}	V _{DD} =-30V, V _{GS} =-10V, R _G =2.2Ω,I _D =-5A		7.5		ns
Turn-On Rise Time	t _r			40		
Turn-Off Delay Time	t _{d(off)}			43		
Turn-Off Fall Time	t _f			55		

Curve Characteristics

Fig.1 - Typical Output Characteristics

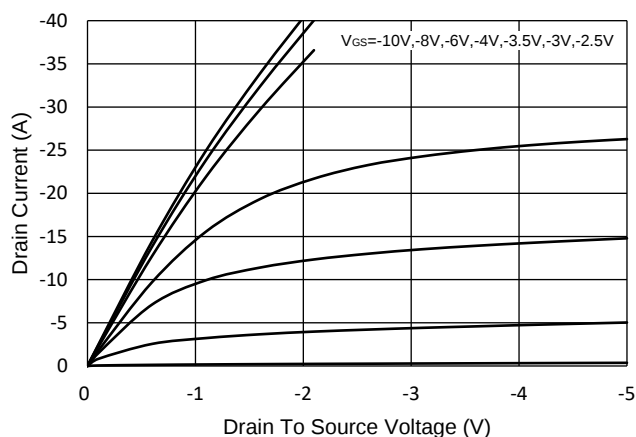


Fig.2 - Transfer Characteristics

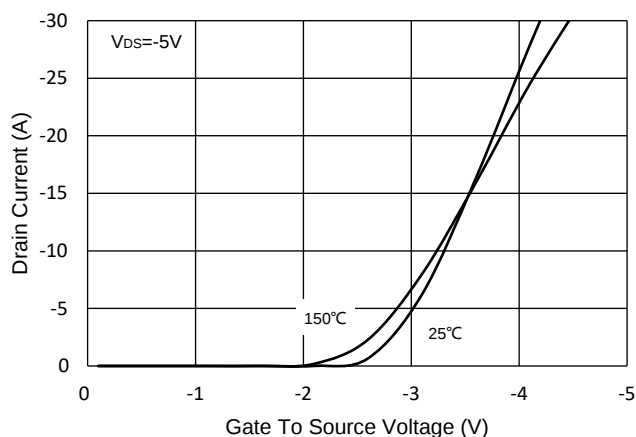


Fig.3 - $R_{DS(ON)} - V_{GS}$

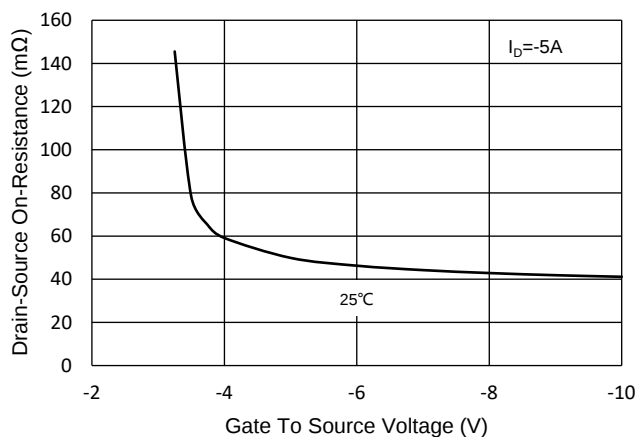


Fig.4 - $R_{DS(ON)} - I_D$

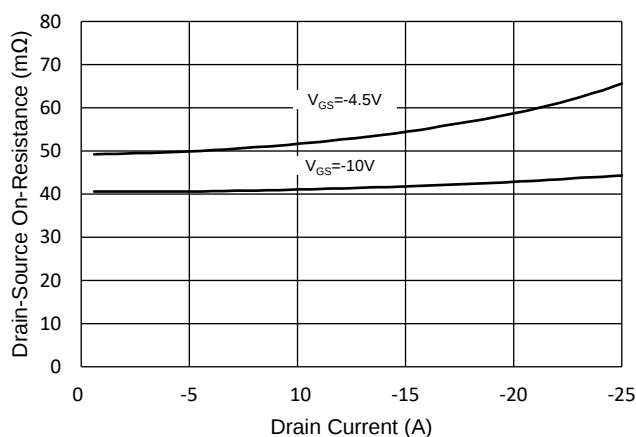


Fig.5 - Capacitance Characteristics

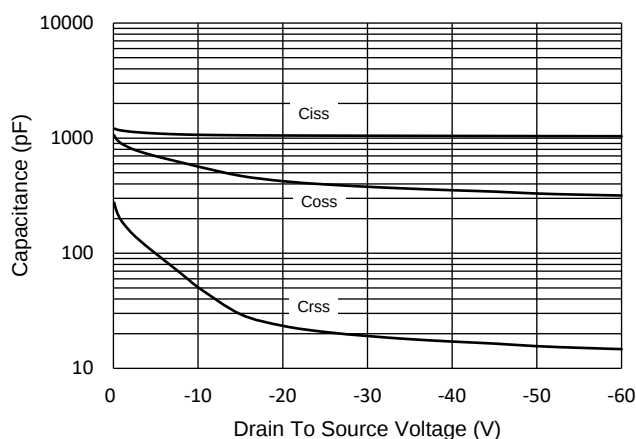
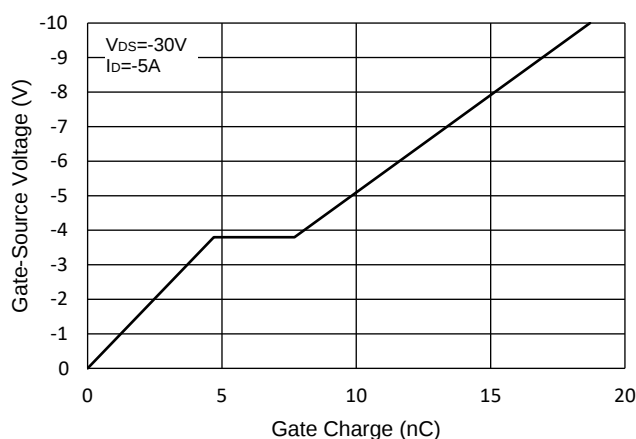


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

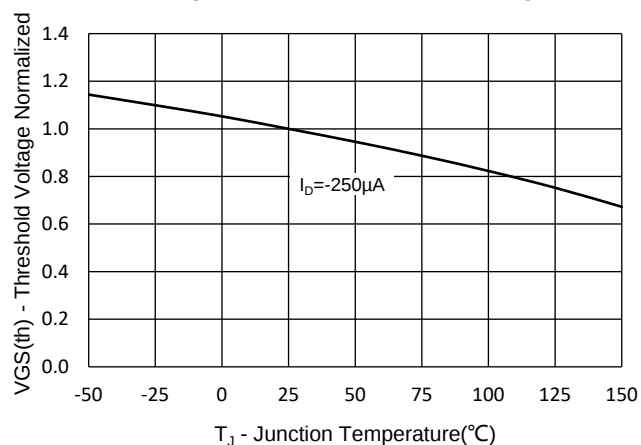


Fig.8 - Normalized On Resistance Characteristics

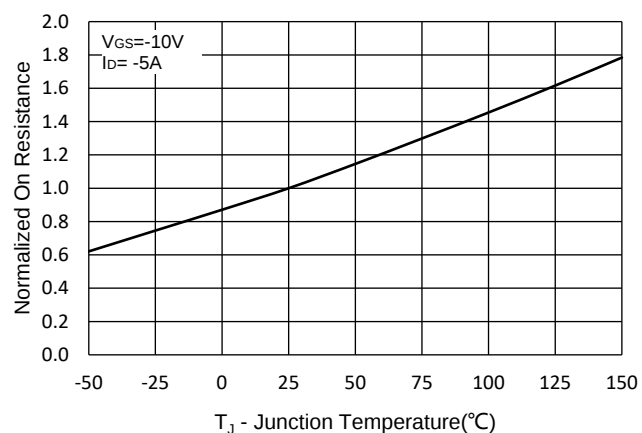


Fig.9 - I_S - V_{SD}

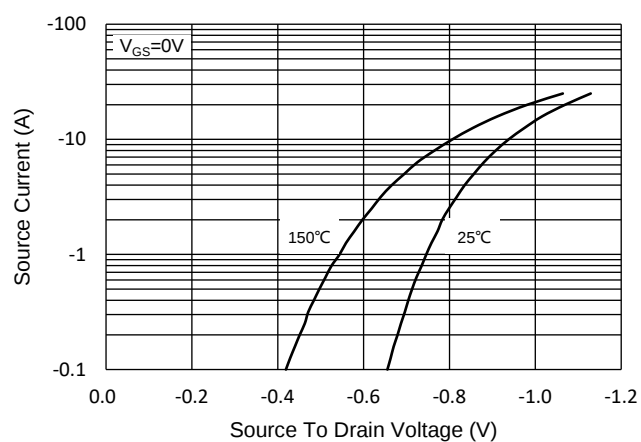


Fig.10 - Drain Current

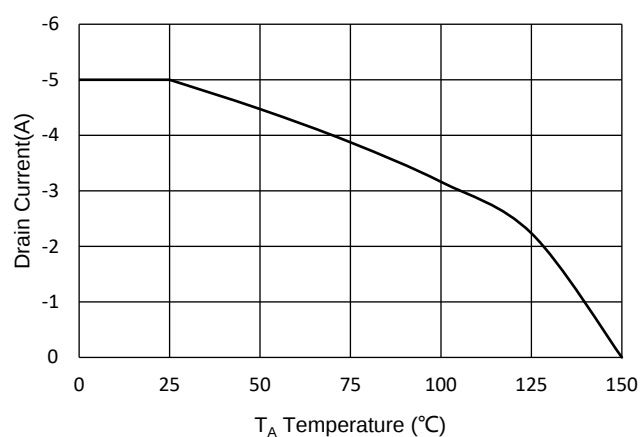
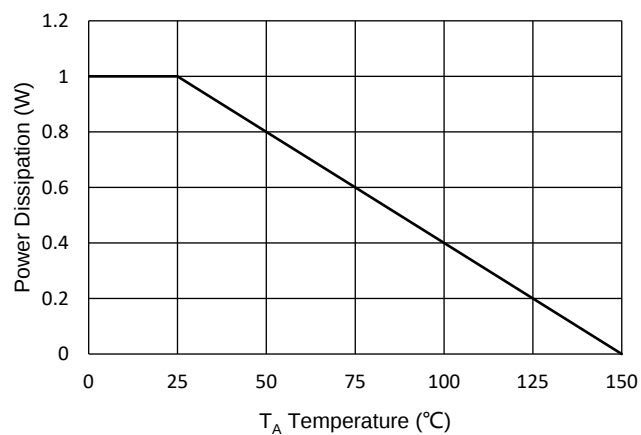


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

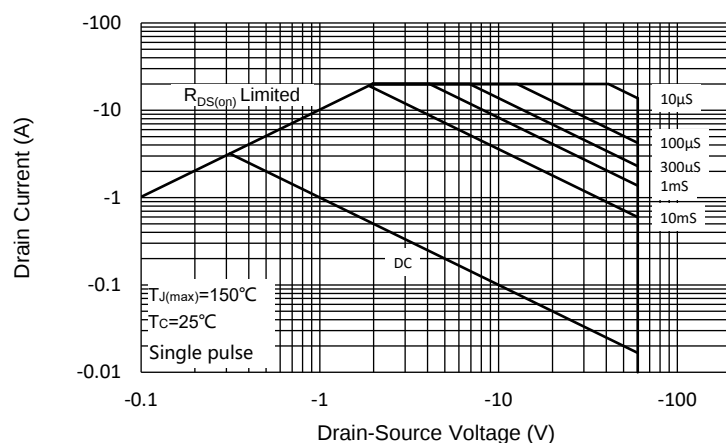
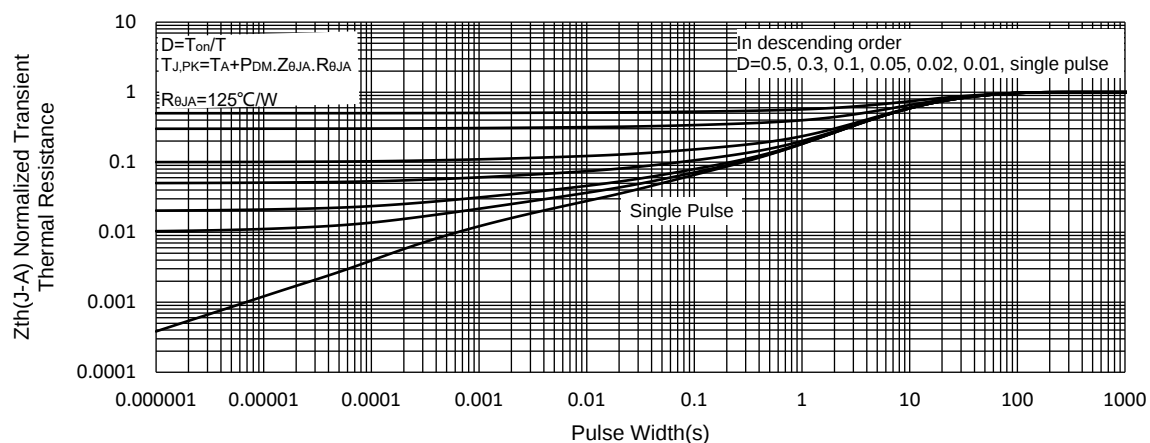


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

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

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