

Features

- AEC-Q101 Qualified
- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- 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

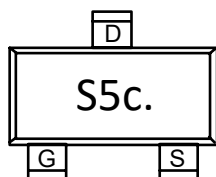
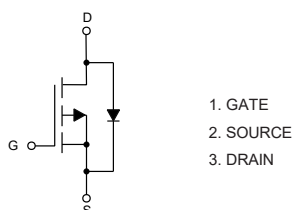
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 100°C/W Junction to Ambient (Note2)

Parameter		Symbol	Rating	Unit
Drain -source Voltage		V _{DS}	-20	V
Gate -Source Voltage		V _{GS}	±12	V
Drain Current-Continuous	T _A =25°C	I _D	-5.4	A
	T _A =100°C		-3.4	
Drain Source Current-Continuous ^(Note3)		I _D	-22	A
Total Power Dissipation ^(Note4)		P _D	1.3	W

Note:

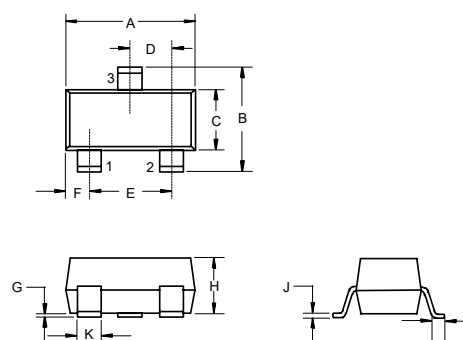
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The Power dissipation P_{DSM} is based on $R_{\theta JA} t \leq 10s$ and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction to ambient thermal resistance.

Internal Structure and Marking Code



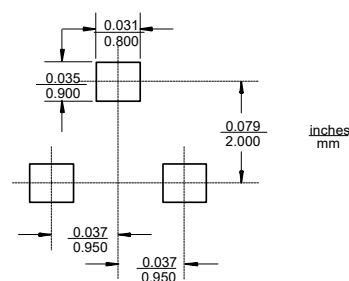
P-Channel MOSFET

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 (Ta=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	-20			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.5	-0.65	-1	V
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-5.4A		30	40	mΩ
		V _{GS} =-2.5V, I _D =-4A		39	55	
Gate Resistance	R _g	F=1 MHz, Open drain		13		Ω
Diode Characteristics						
Diode Forward Current	I _S				-5.4	A
Diode Forward Voltage	V _{SD}	I _F =-0.5A, V _{GS} =0V			-1.2	V
Reverse Recovery Time	t _{rr}	I _F =-1A, dI _F /dt=100A/μs		17		ns
Reverse Recovery Charge	Q _{rr}			4.7		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHz		770		pF
Output Capacitance	C _{oss}			115		
Reverse Transfer Capacitance	C _{rss}			98		
Total Gate Charge	Q _g	V _{DS} =-10V, V _{GS} =-10V, I _D =-1A		10.5		nC
Gate-Source Chage	Q _{gs}			1.52		
Gage-Drain Charge	Q _{gd}			2.42		
Turn-On Delay Time	t _{d(on)}	V _{DD} =-10V, V _{GS} =-10V, I _D =-1A, R _{GEN} =3Ω		7.5		ns
Turn-On Rise Time	t _r			14		
Turn-Off Delay Time	t _{d(off)}			40		
Turn-Off Fall Time	t _f			20		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

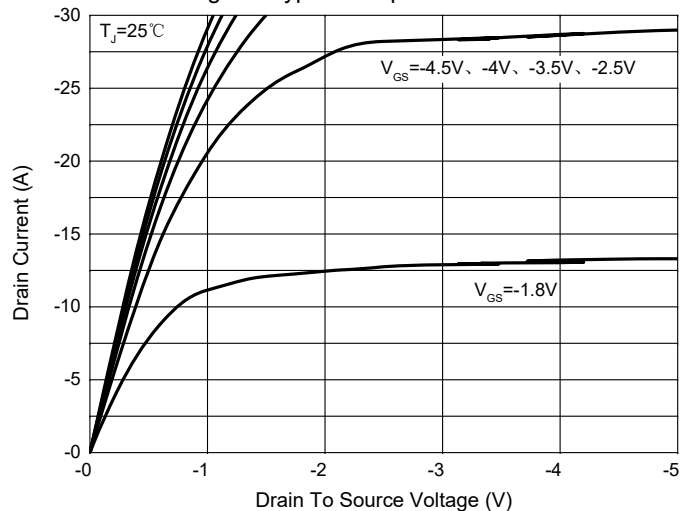


Fig. 2 - Transfer Characteristics

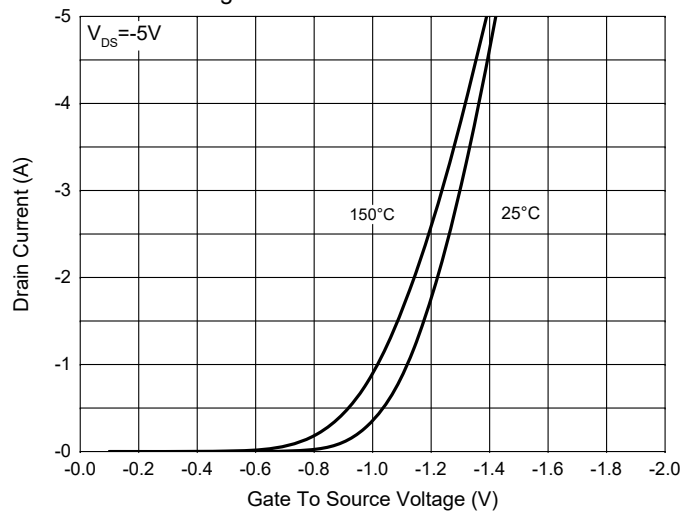


Fig. 3 - $R_{DS(ON)} - V_{GS}$

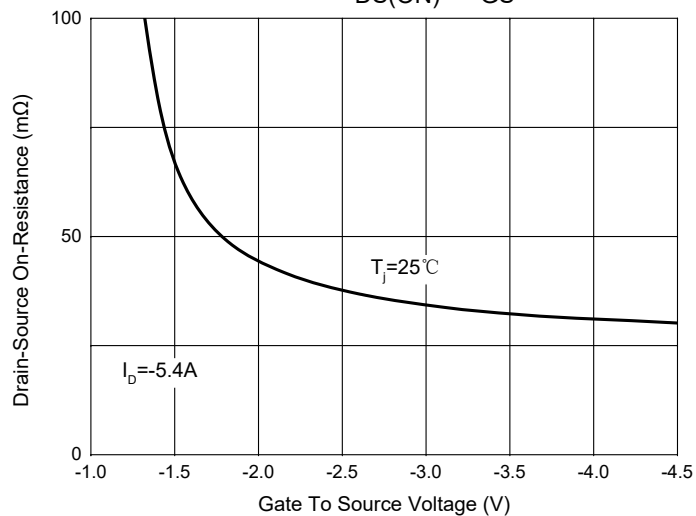


Fig. 4 - $R_{DS(ON)} - I_D$

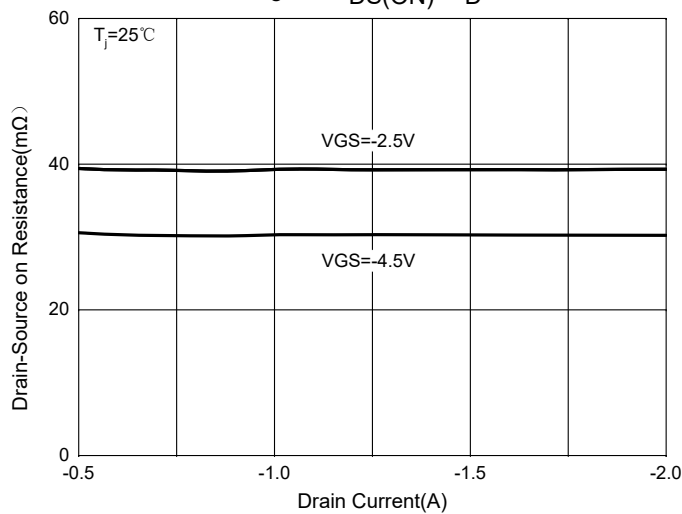


Fig. 5 - Capacitance Characteristics

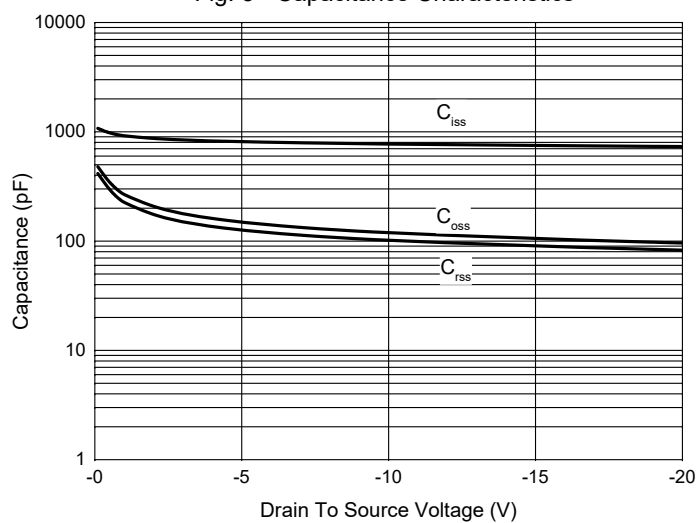
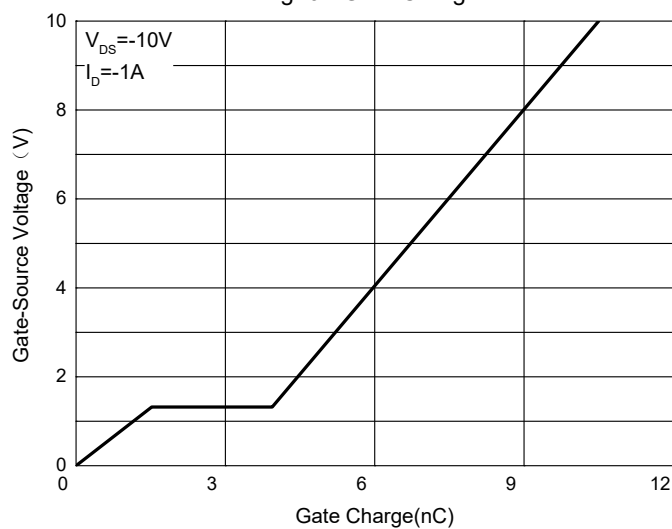


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

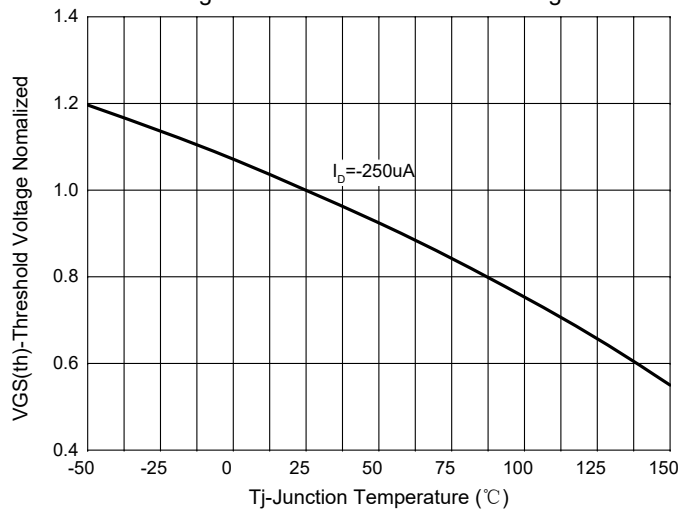


Fig. 8 - Normalized On Resistance Characteristics

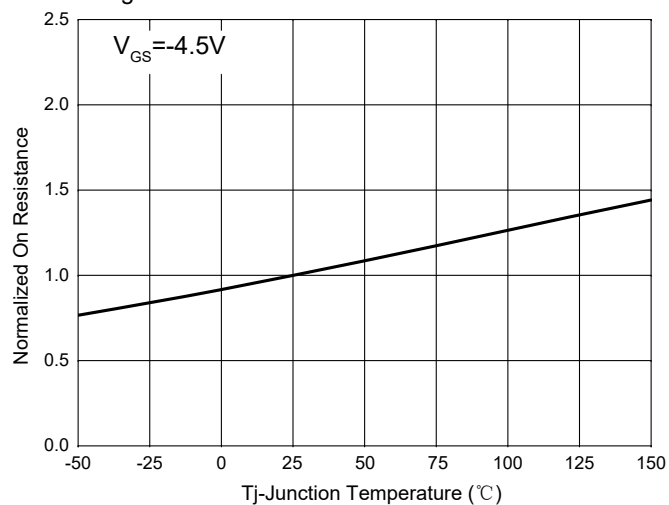


Fig.9 - $I_S - V_{SD}$

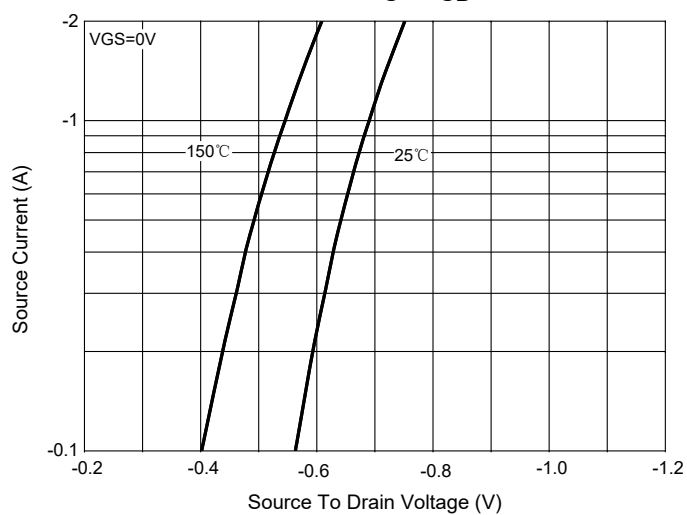


Fig. 10 - Current Dissipation

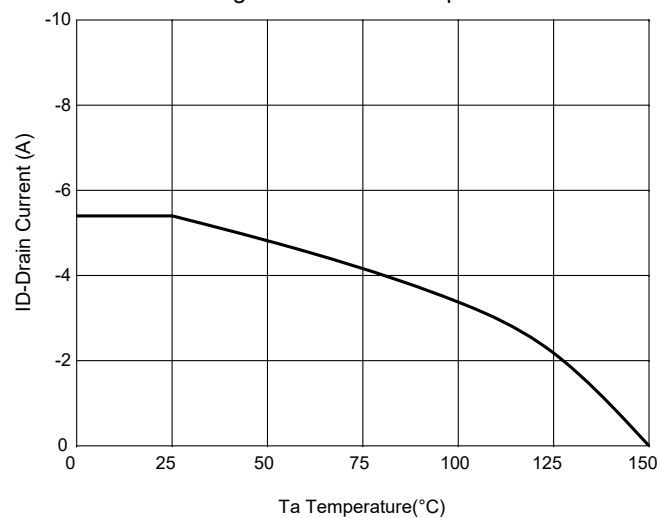
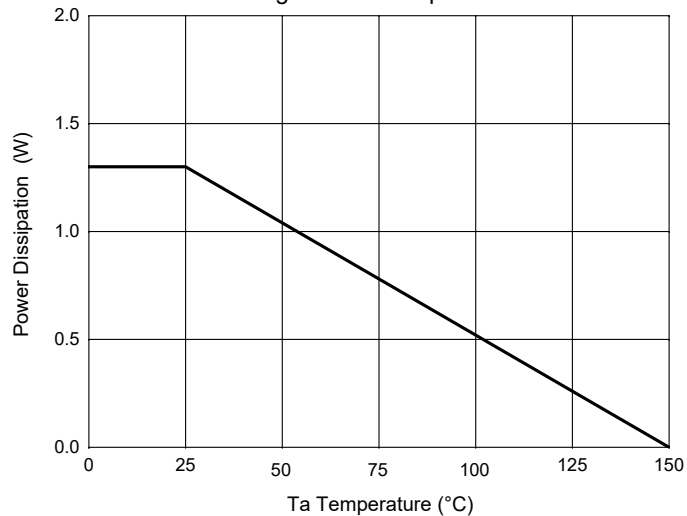


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

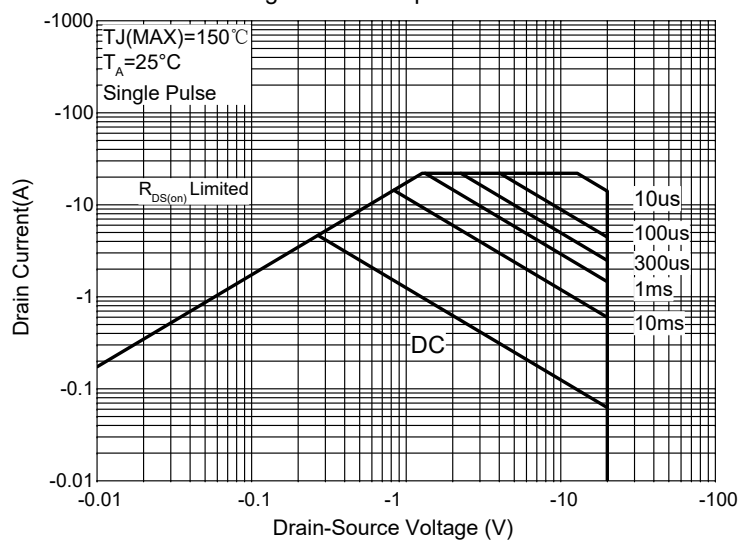
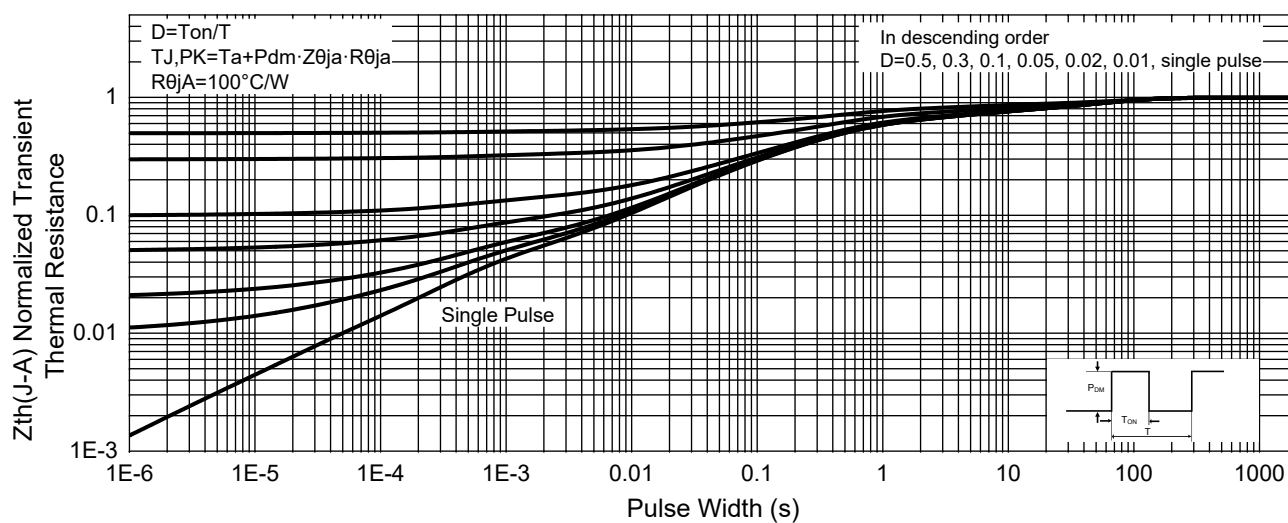


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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