

Features

- AEC-Q101 Qualified
- Trench MV MOSFET Technology
- 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

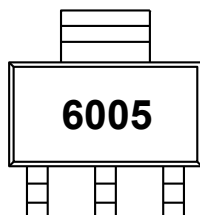
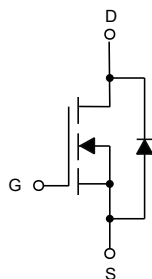
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 60°C/W Junction to Ambient^(Note2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	5	A
		3.1	
Pulsed Drain Current ^(Note 3)	I_{DM}	20	A
Total Power Dissipation ^(Note 4)	P_D	2.1	W
Single Pulsed Avalanche Energy ^(Note 5)	E_{AS}	30	mJ

Note:

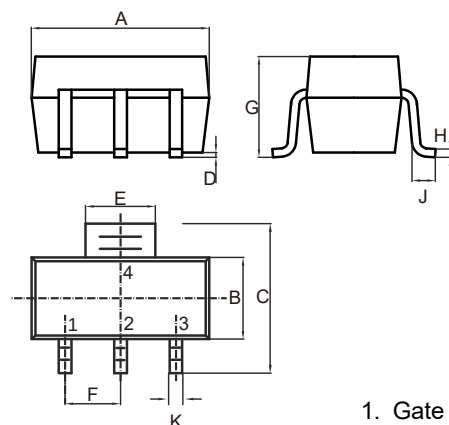
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.
5. $T_J = 25^\circ\text{C}$, $V_{DD} = 40\text{V}$, $V_{GS} = 10\text{V}$, $R_G = 25\Omega$, $L = 0.5\text{mH}$.

Internal Structure and Marking Code



N-CHANNEL MOSFET

SOT-223



1. Gate
- 2,4. Drain
3. Source

DIMENSIONS					
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	1.0	1.4	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =5A		27	35	mΩ
		V _{GS} =4.5V, I _D =4A		30	45	
Gate Resistance	R _g	f=1 MHz, Open drain		1.8		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 =20A, dI _F /dt=100A/μs		23		ns
Reverse Recovery Charge	Q _{rr}			20		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =30V,V _{GS} =0V,f=1MHz		1173		pF
Output Capacitance	C _{oss}			65		
Reverse Transfer Capacitance	C _{rss}			56		
Total Gate Charge	Q _g	V _{DS} =30V,V _{GS} =10V,I _D =10A		24		nC
Gate-Source Charge	Q _{gs}			3		
Gate-Drain Charge	Q _{gd}			5		
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V,V _{DD} =30V I _D =10A ,R _G =2.2Ω		7		ns
Turn-On Rise Time	t _r			14		
Turn-Off Delay Time	t _{d(off)}			27		
Turn-Off Fall Time	t _f			3		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

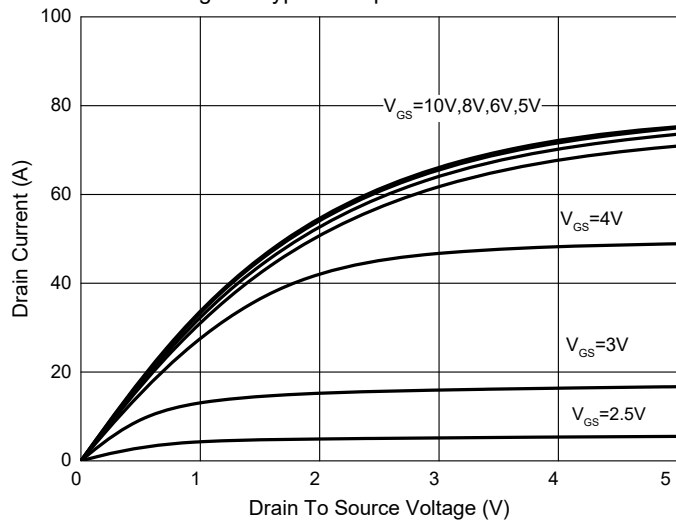


Fig. 2 - Transfer Characteristics

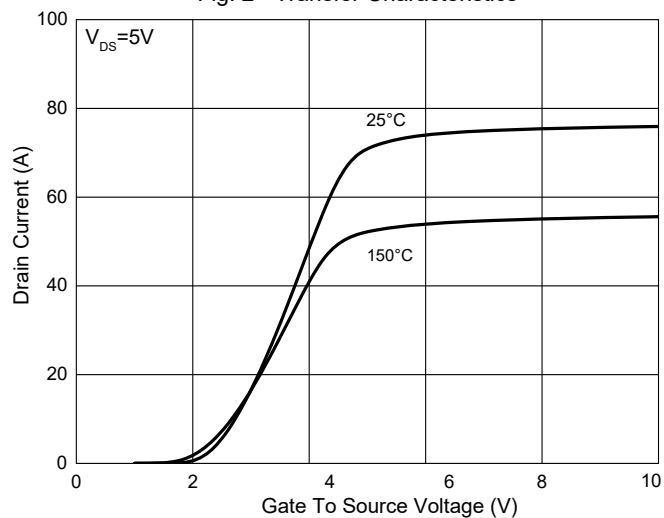


Fig. 3 - $R_{DS(ON)}$ — V_{GS}

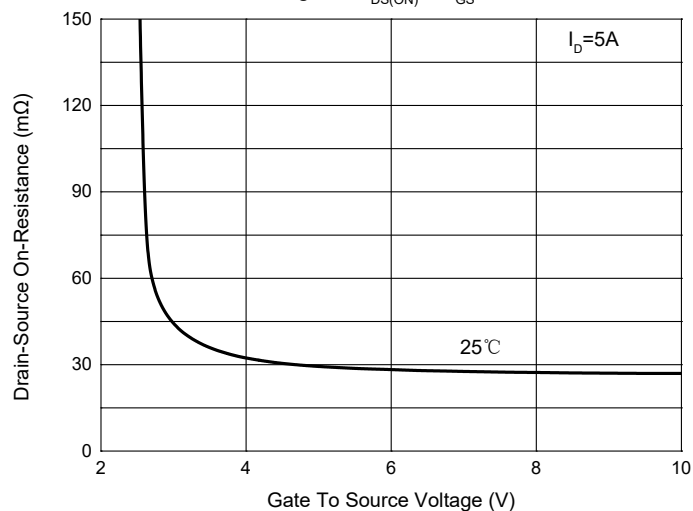


Fig. 4 - $R_{DS(ON)}$ — I_D

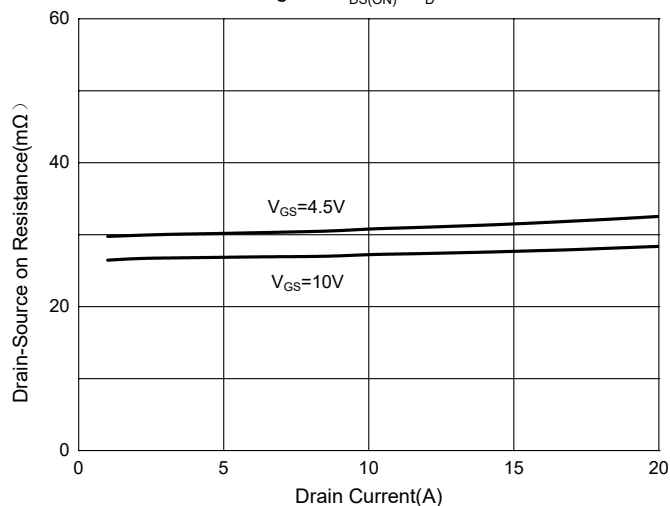


Fig. 5 - Capacitance Characteristics

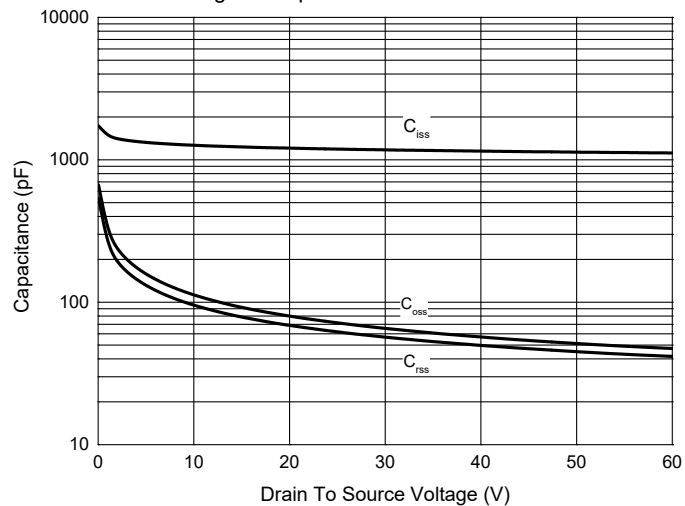
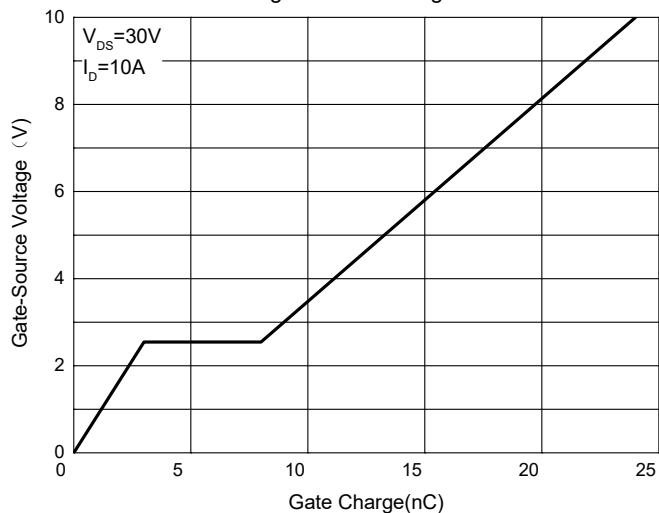


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

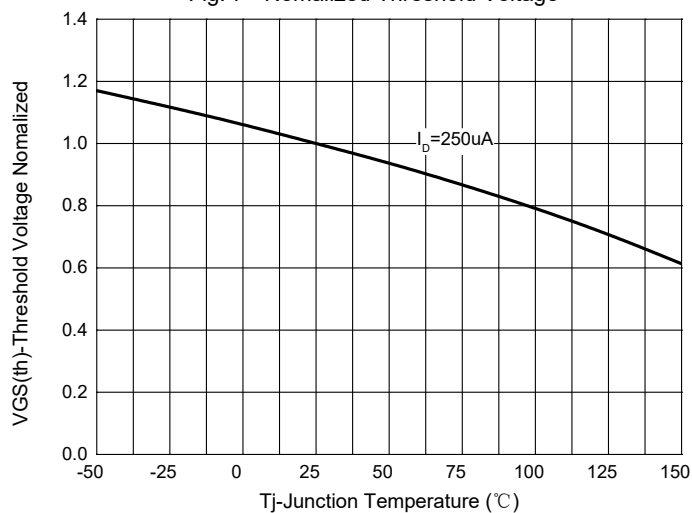


Fig.8-Normalized On Resistance Characteristics

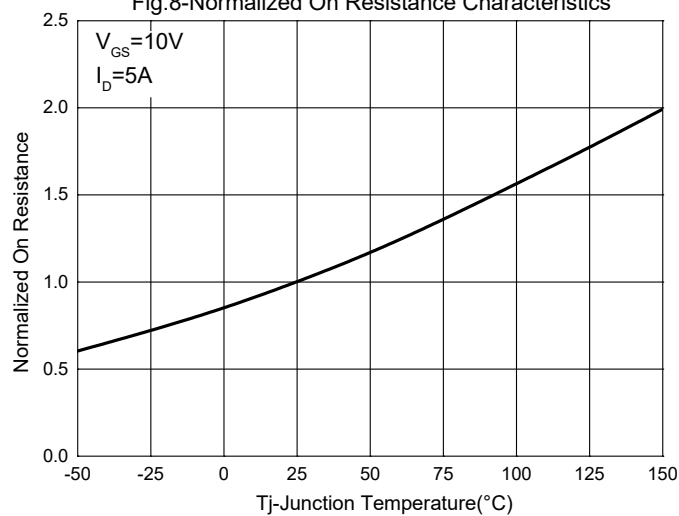


Fig.9 - $I_S - V_{SD}$

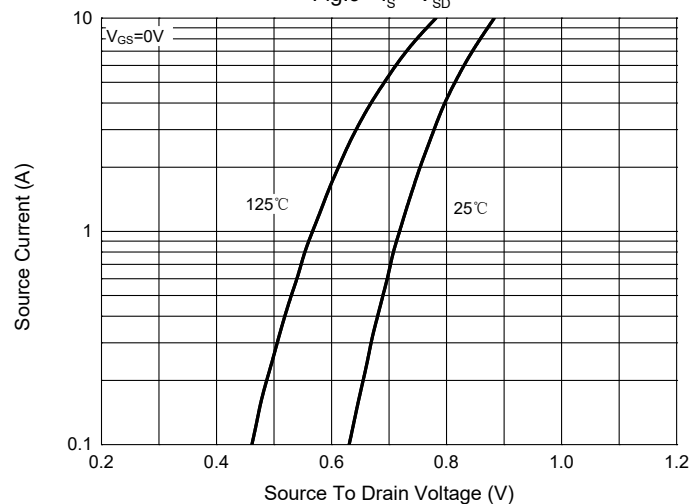


Fig. 10 - Drain Current

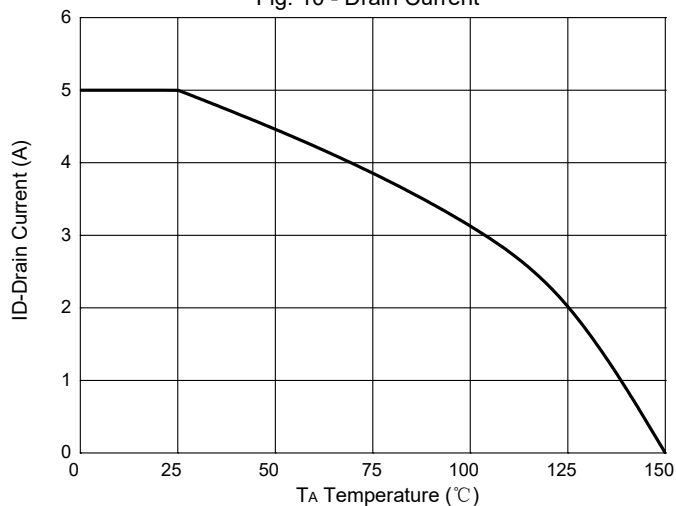
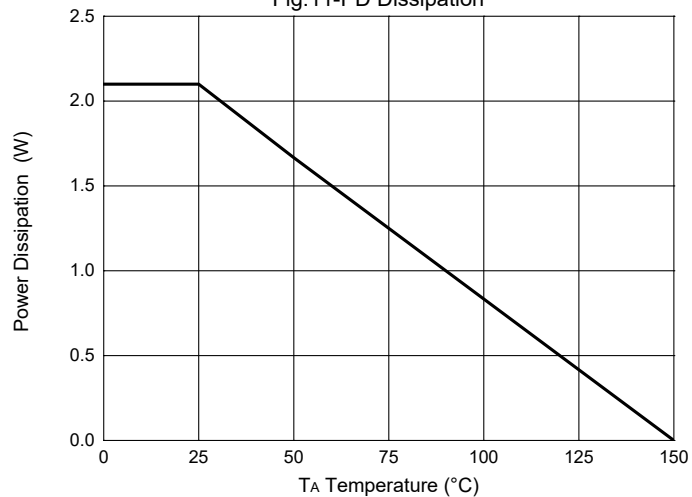


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

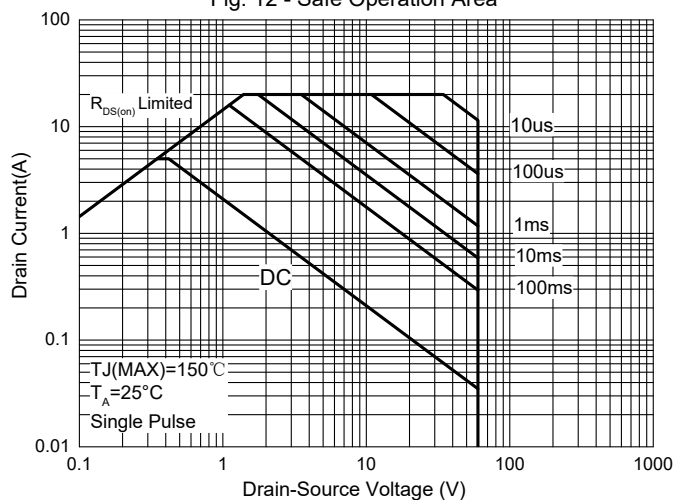
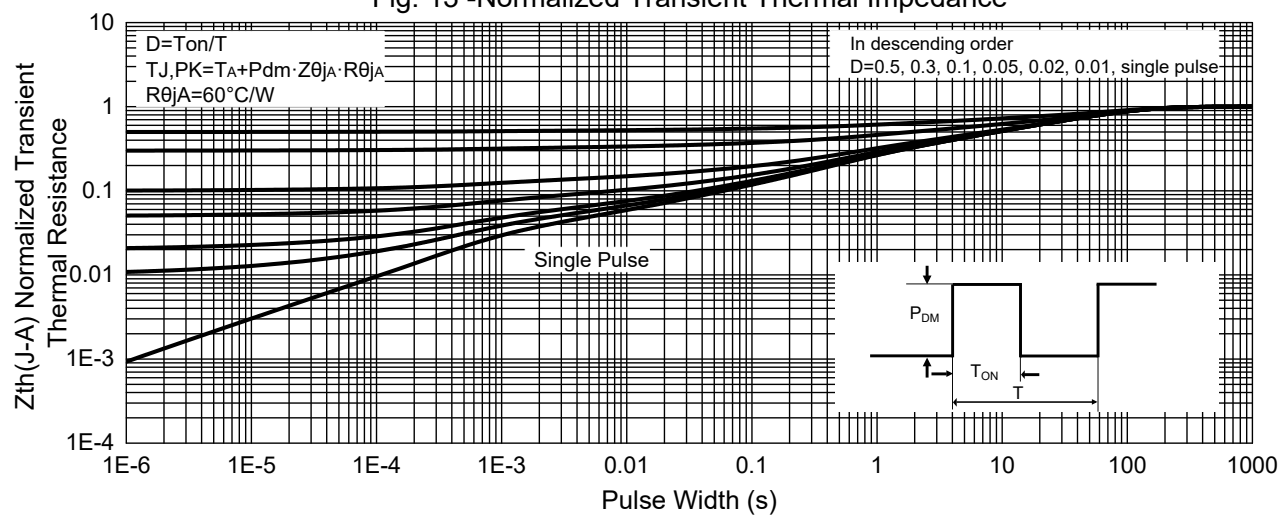


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

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

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