

**Features**

- Split Gate Trench MOSFET Technology
- High Density Cell Design For 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**

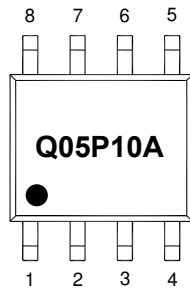
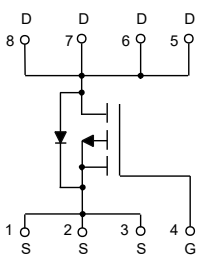
- Operating Junction Temperature Range :  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Thermal Resistance:  $75^{\circ}\text{C/W}$  Junction to Ambient(Steady-State)(Note2)
- Thermal Resistance:  $24^{\circ}\text{C/W}$  Junction to Lead(Steady-State)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A=25^{\circ}\text{C}$	-4.5
		$T_A=100^{\circ}\text{C}$	-2.8
Pulsed Drain Current (Note3)	$I_{DM}$	-18	A
Total Power Dissipation (Note4)	$P_D$	1.6	W
Single Pulsed Avalanche Energy (Note5)	$E_{AS}$	56	mJ

Note:

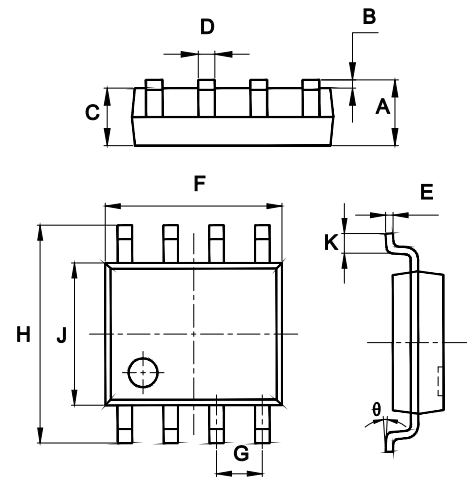
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment 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  $150^{\circ}\text{C}$ . 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-ambient thermal resistance.
5.  $T_J=25^{\circ}\text{C}$ ,  $V_{DD}=-30V$ ,  $V_{GS}=-10V$ ,  $L=0.5mH$

**Internal Structure and Marking Code**



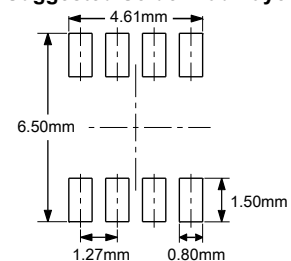
**P-CHANNEL MOSFET**

**SOP-8**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.35	1.75	
B	0.004	0.010	0.10	0.25	
C	0.053	0.061	1.35	1.55	
D	0.013	0.020	0.33	0.51	
E	0.007	0.010	0.17	0.25	
F	0.185	0.200	4.70	5.10	
G	0.050		1.270		TYP.
H	0.228	0.244	5.80	6.20	
J	0.150	0.157	3.80	4.00	
K	0.016	0.050	0.40	1.27	
$\theta$	$0^{\circ}$	$8^{\circ}$	$0^{\circ}$	$8^{\circ}$	

**Suggested Solder Pad Layout**



**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-100			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-100V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.8	-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-3A$		83	110	m $\Omega$
		$V_{GS}=-4.5V, I_D=-2A$		95	120	
Gate Resistance	$R_g$	F=1 MHz, Open drain		9.8		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-4.5	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-3A$			-1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=-5A, dI_F/dt=100A/\mu s$		40		ns
Reverse Recovery Charge	$Q_{rr}$			80		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-50V, V_{GS}=0V, f=1MHz$		1062		pF
Output Capacitance	$C_{oss}$			112		
Reverse Transfer Capacitance	$C_{rss}$			8.7		
Total Gate Charge	$Q_g$	$V_{DS}=-50V, V_{GS}=-10V, I_D=-5A$		19		nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			3.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-50V, V_{GS}=-10V,$ $R_{GEN}=6\Omega, I_D=-5A$		7.4		ns
Turn-On Rise Time	$t_r$			9.3		
Turn-Off Delay Time	$t_{d(off)}$			58		
Turn-Off Fall Time	$t_f$			19		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

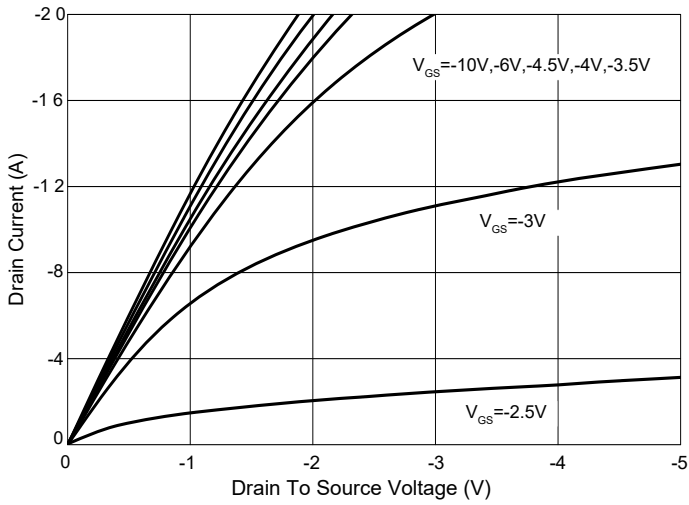


Fig. 2 - Transfer Characteristics

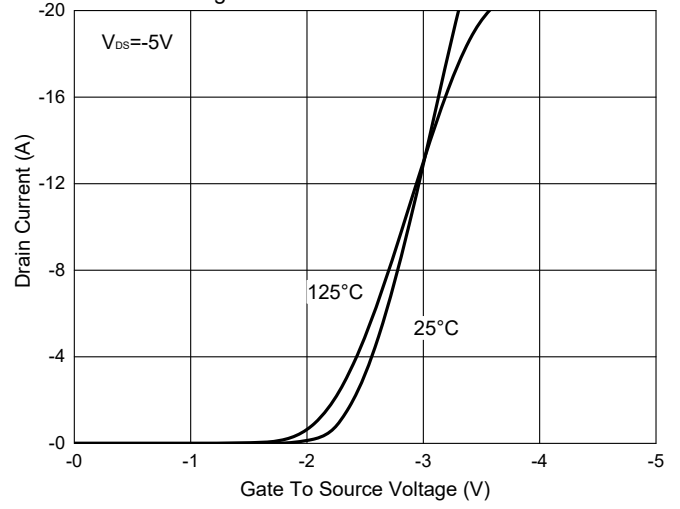


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

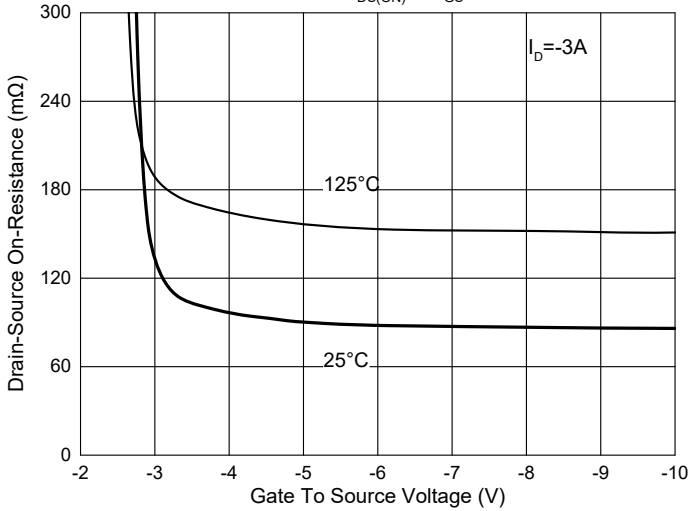


Fig. 4 -  $R_{DS(ON)} - I_D$

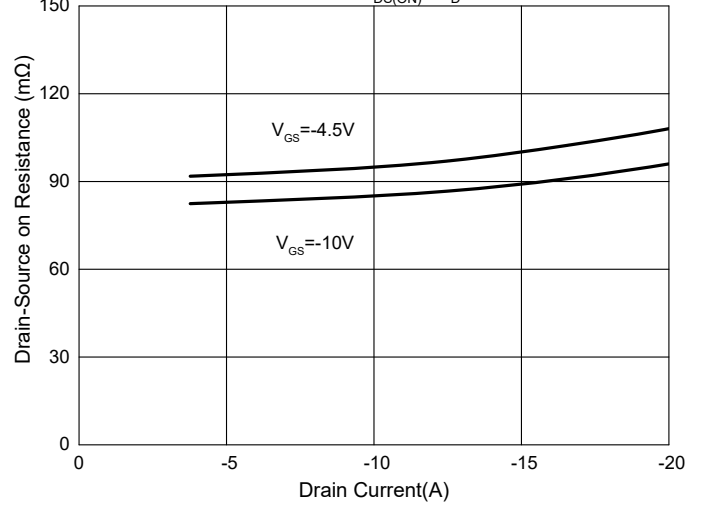


Fig. 5 - Capacitance Characteristics

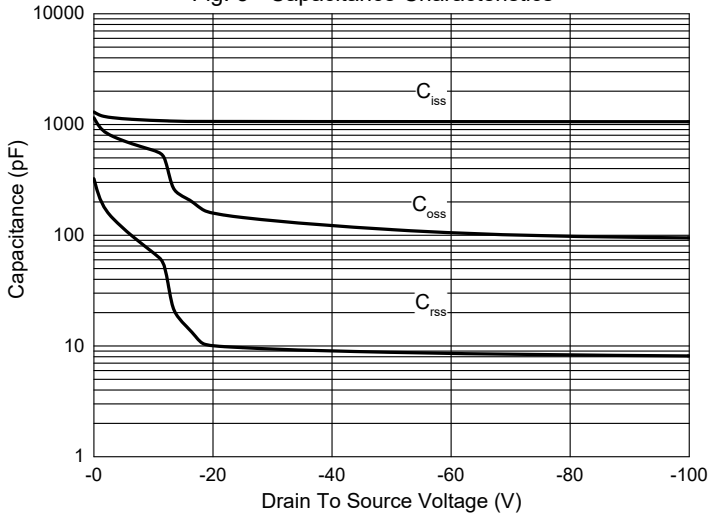
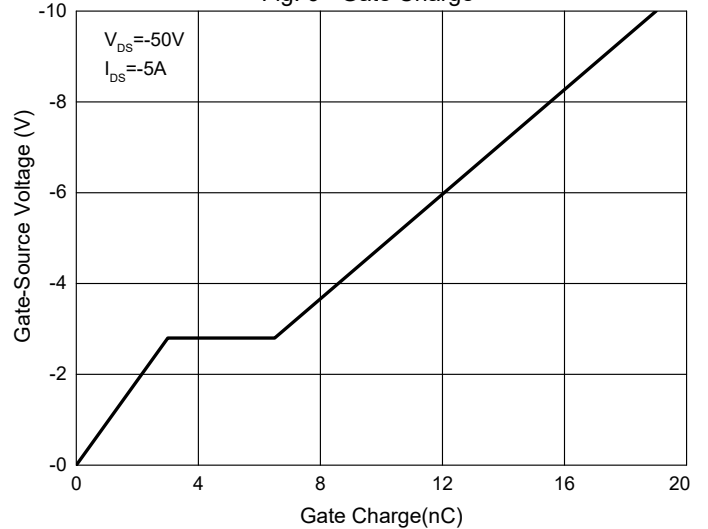


Fig. 6 - Gate Charge



**Curve Characteristics**

Fig. 7 - Normalized Threshold Voltage

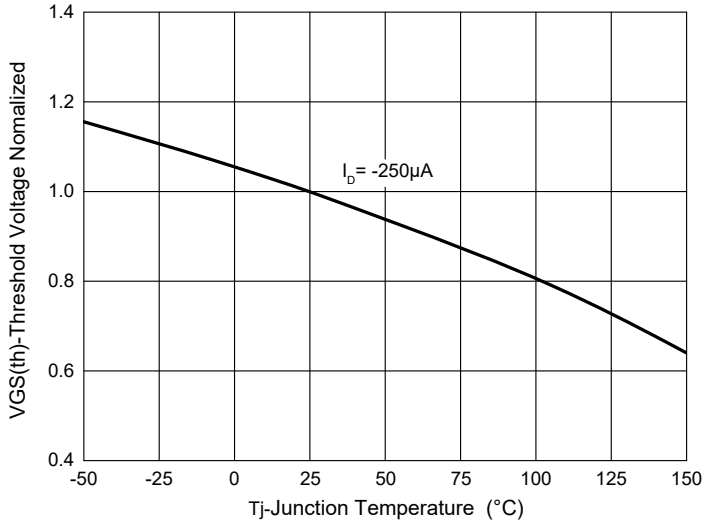


Fig. 8 - Normalized On Resistance Characteristics

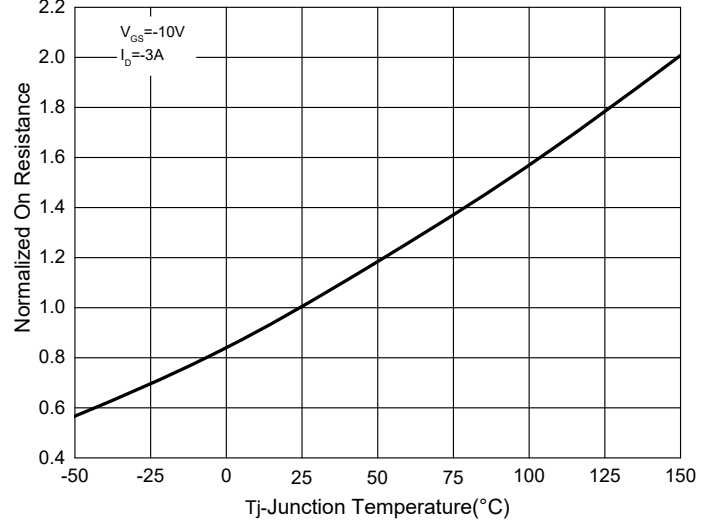


Fig. 9 -  $I_s - V_{SD}$

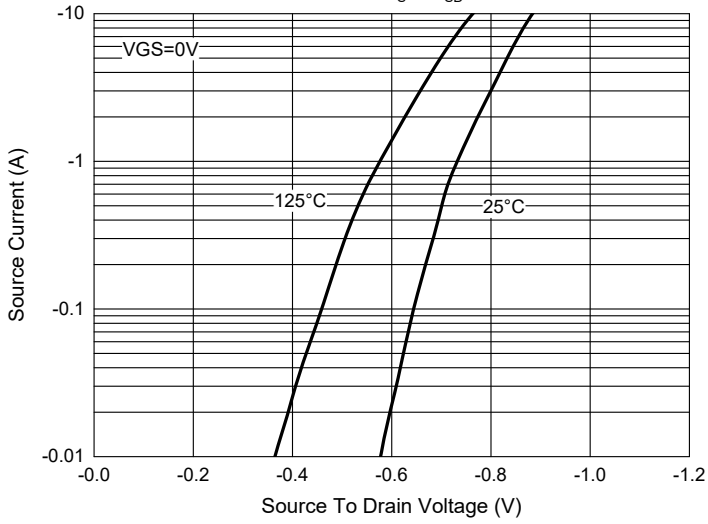


Fig. 10 - Drain Current

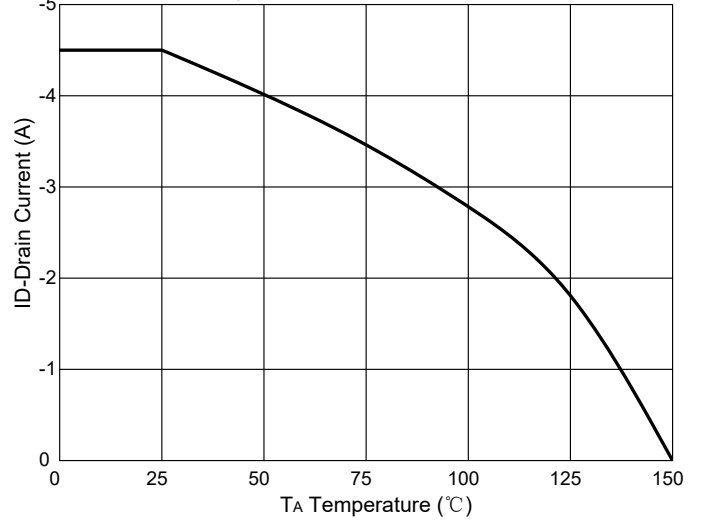
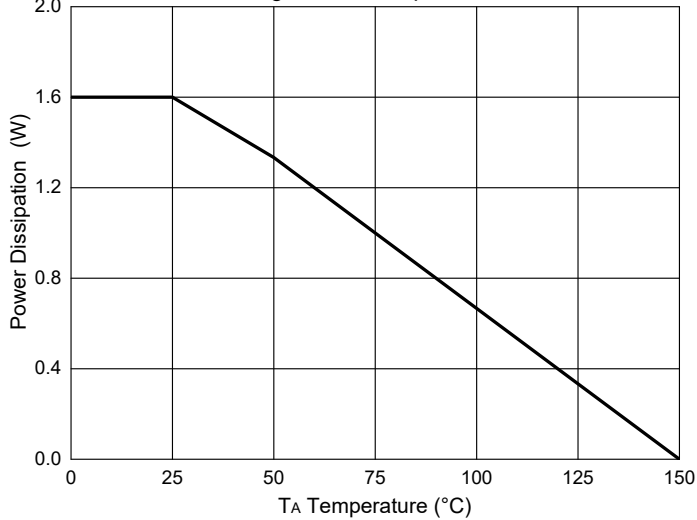


Fig. 11-PD Dissipation



### Curve Characteristics

Fig. 12 - Safe Operation Area

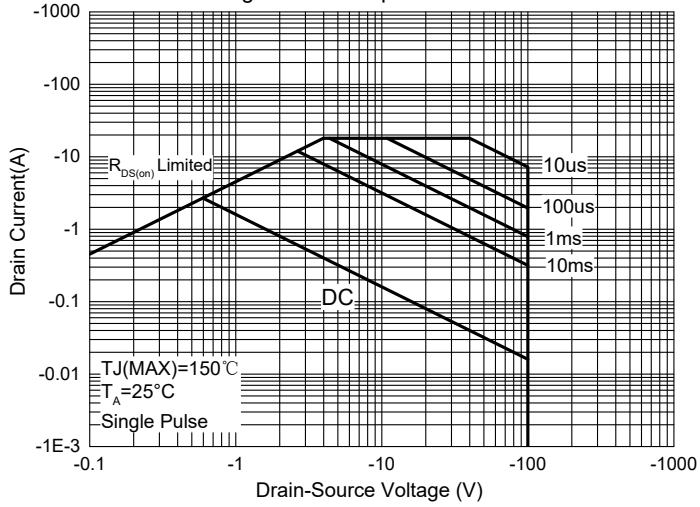
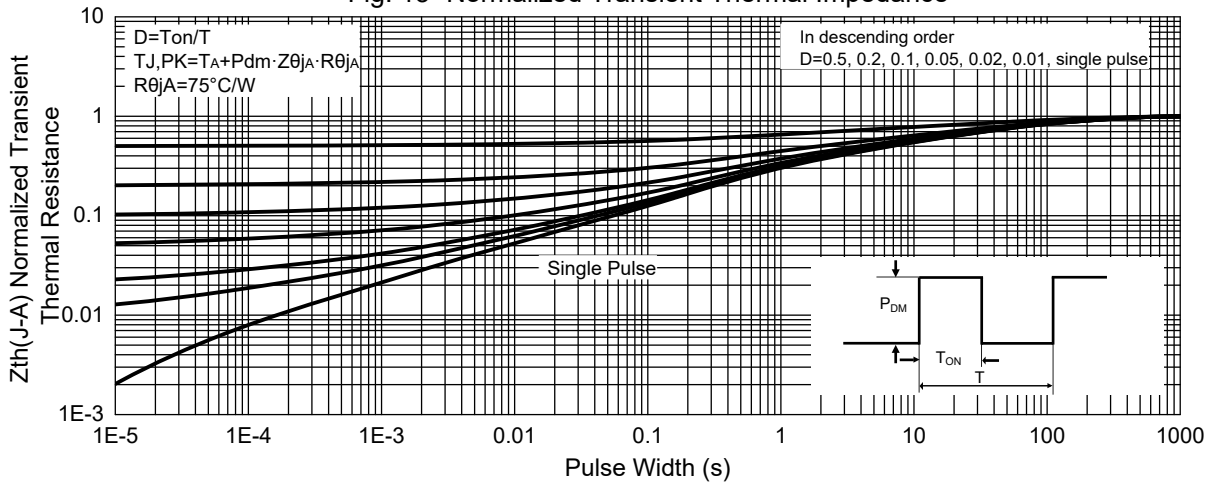


Fig. 13 - Normalized Transient Thermal Impedance



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 4Kpcs/Reel

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