Features

- Advanced Trench Cell Design
- Halogen Free. “Green” Device (Note 1)
- Moisture Sensitivity Level 3
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

P-Channel Power MOSFET

Maximum Ratings

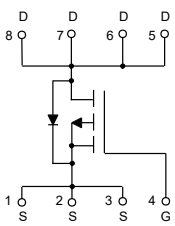
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 60°C/W Junction to Ambient(Note2)
- Thermal Resistance: 22°C/W Junction to Case

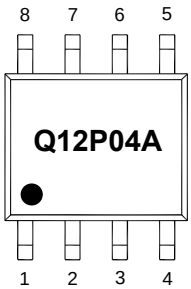
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	-12	A
	T_A=100°C		-7.6	
Pulsed Drain Current(Note3)		I_{DM}	-48	A
Total Power Dissipation(Note4)		P_D	2.0	W
Single Pulsed Avalanche Energy(Note5)		E_{AS}	64	mJ

Note:

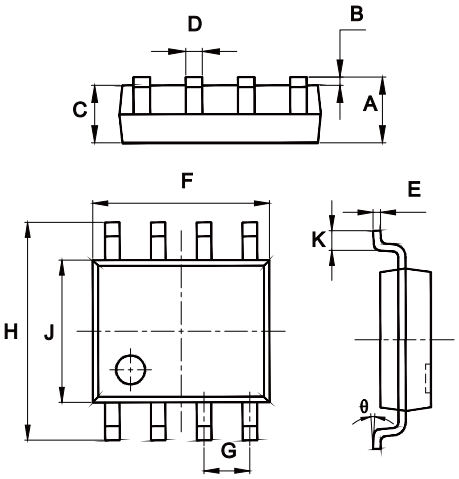
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A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

Internal Structure and Marking Code



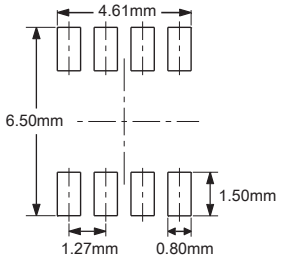


SOP-8



DIMENSIONS					
DIM	INCHES		MM		NOTE
	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	
θ	0°	8°	0°	8°	

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (T_A=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	-40			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1.0	-1.6	-2.5	V
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40V, V_{GS}=0V			-1.0	μA
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-20A		17	21	mΩ
		V_{GS}=-4.5V, I_D=-10A		21	26	
Gate Resistance	R_g	f=1MHz, Open drain		10		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				-12	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-20A			-1.2	V
Reverse Recovery Time	t_{rr}	I_S=-6A, dI_F/dt=100A/μs		38		ns
Reverse Recovery Charge	Q_{rr}			29		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-20V,V_{GS}=0V,f=1MHz		2500		pF
Output Capacitance	C_{oss}			196		
Reverse Transfer Capacitance	C_{rss}			188		
Total Gate Charge	Q_g	V_{DS}=-20V,V_{GS}=-10V,I_D=-6A		60.3		nC
Gate-Source Charge	Q_{gs}			6.6		
Gate-Drain Charge	Q_{gd}			12.4		
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-20V, V_{GEN}=-10V, R_G=3Ω, I_{DS}=-6A		7.7		ns
Turn-On Rise Time	t_r			3.6		
Turn-Off Delay Time	$t_{d(off)}$			145		
Turn-Off Fall Time	t_f			53		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

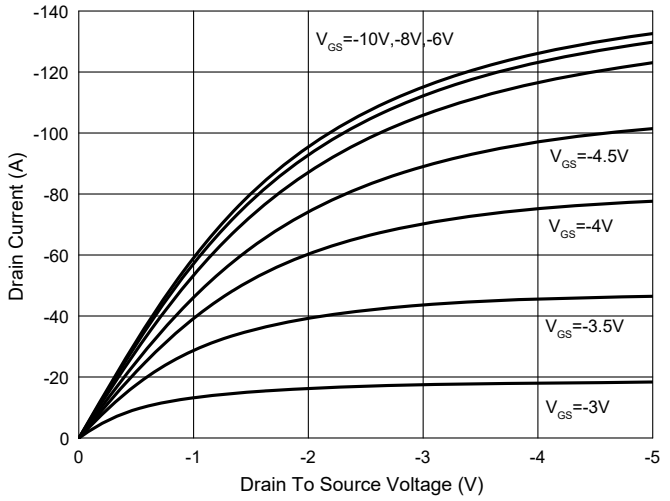


Fig. 2 - Transfer Characteristics

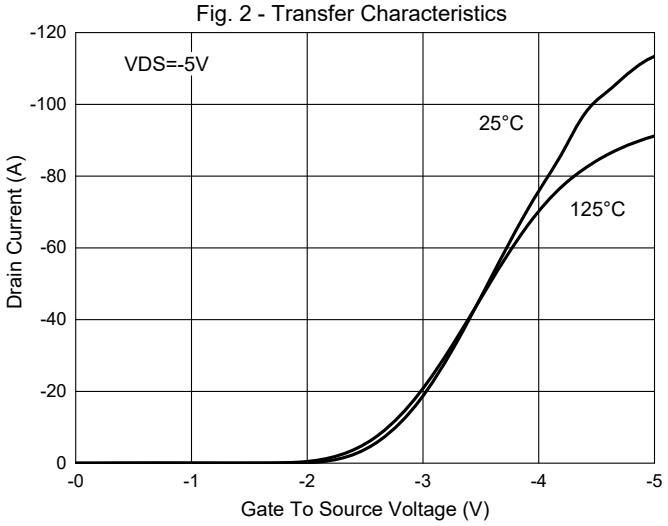


Fig. 3 - $R_{DS(ON)}$—I_D

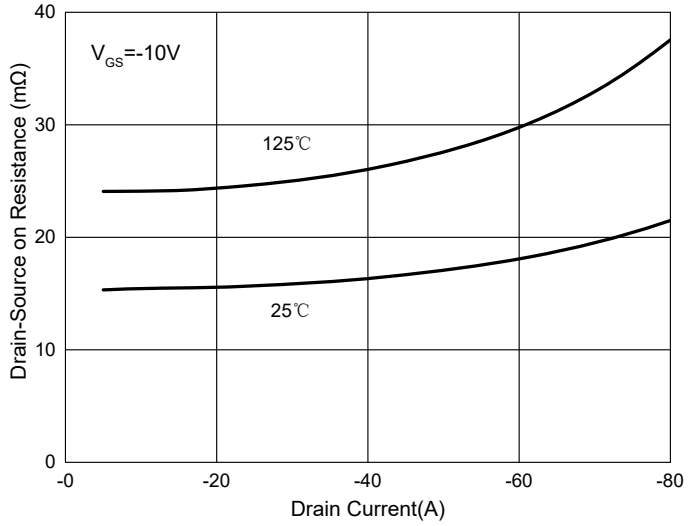


Fig. 4 - Normalized On Resistance Characteristics

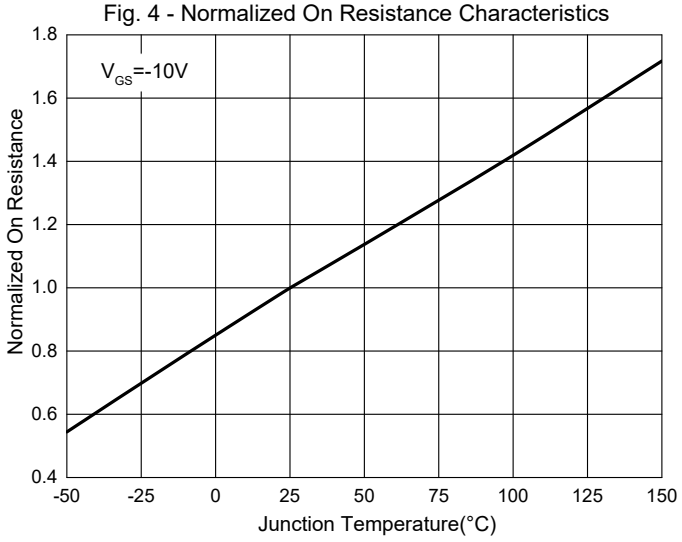


Fig. 5 - Capacitance Characteristics

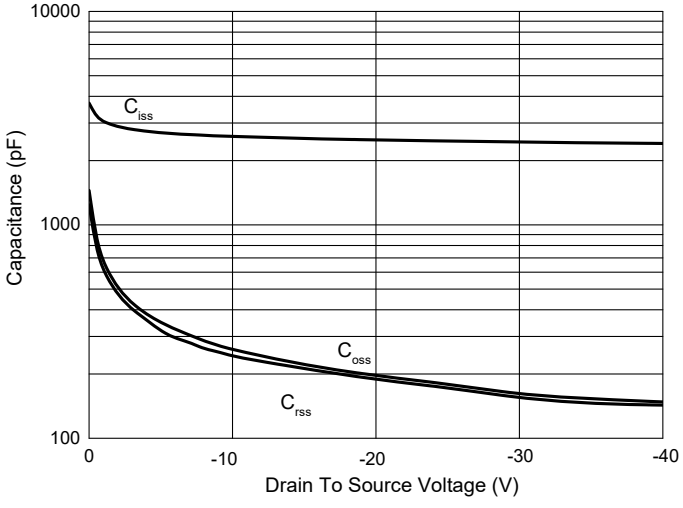
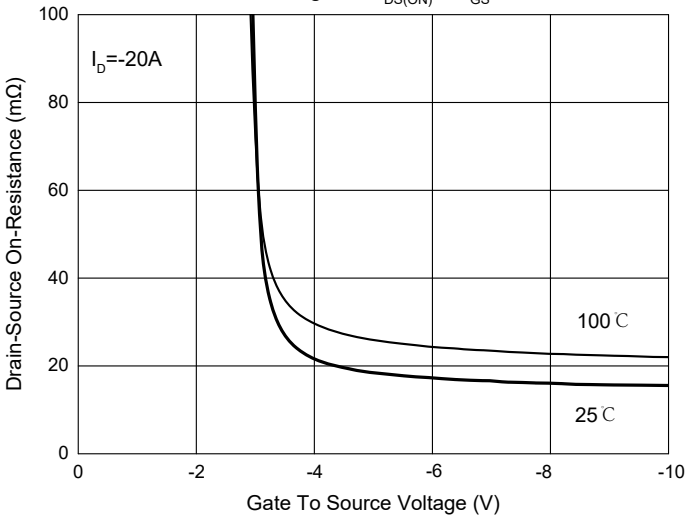


Fig. 6 - $R_{DS(ON)}$—V_{GS}



Curve Characteristics

Fig. 7 - Threshold Voltage

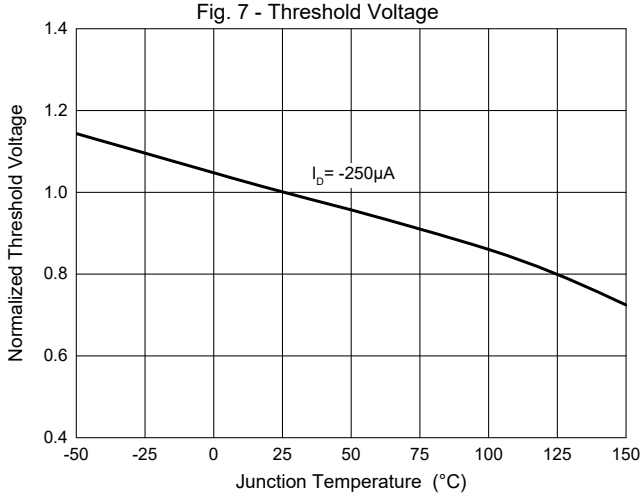


Fig. 8 - Gate Charge

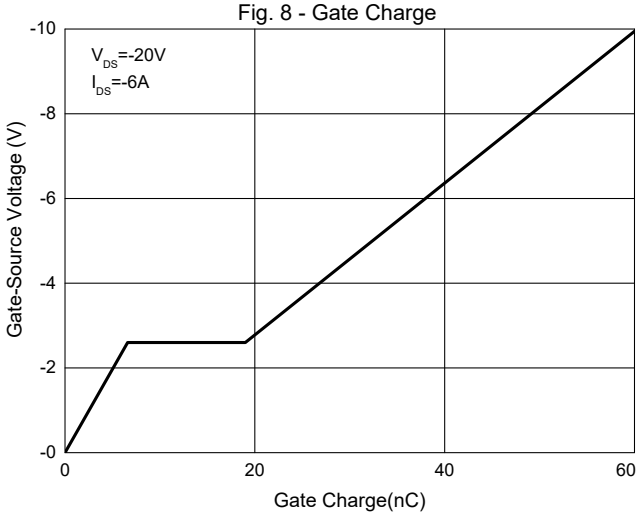


Fig. 9 - I_S—V_{SD}

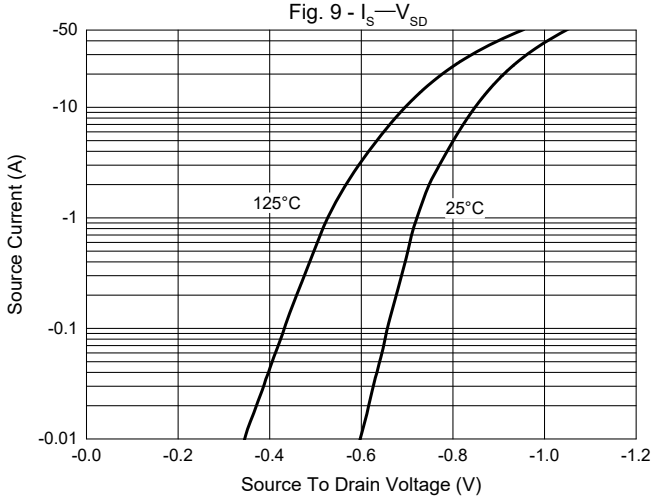


Fig. 10 - Current Dissipation

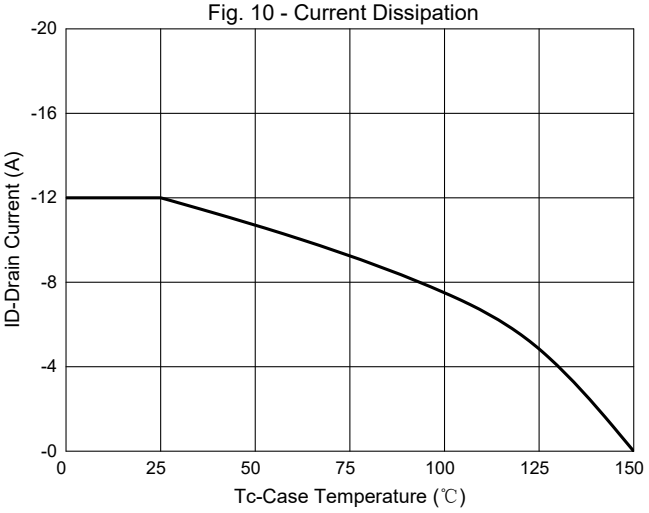
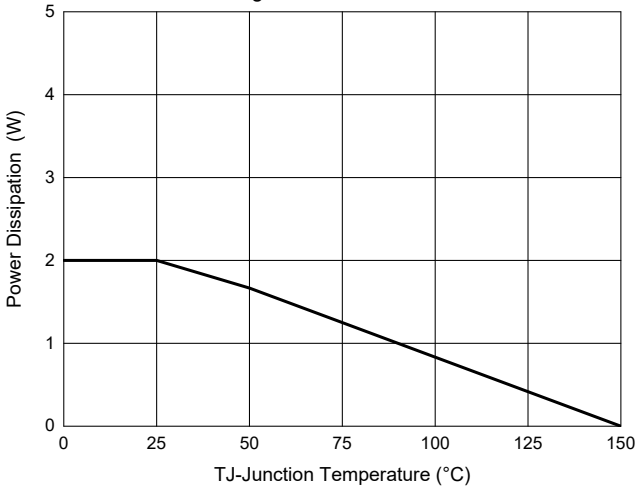


Fig. 11 - PD—TJ



Curve Characteristics

Fig. 12- Safe Operation Area

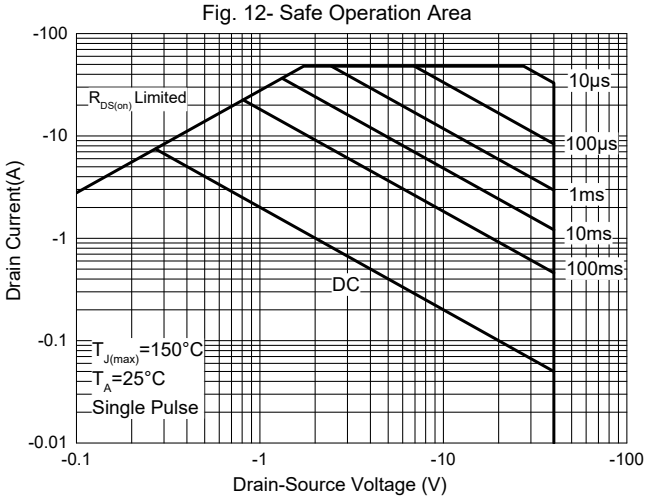
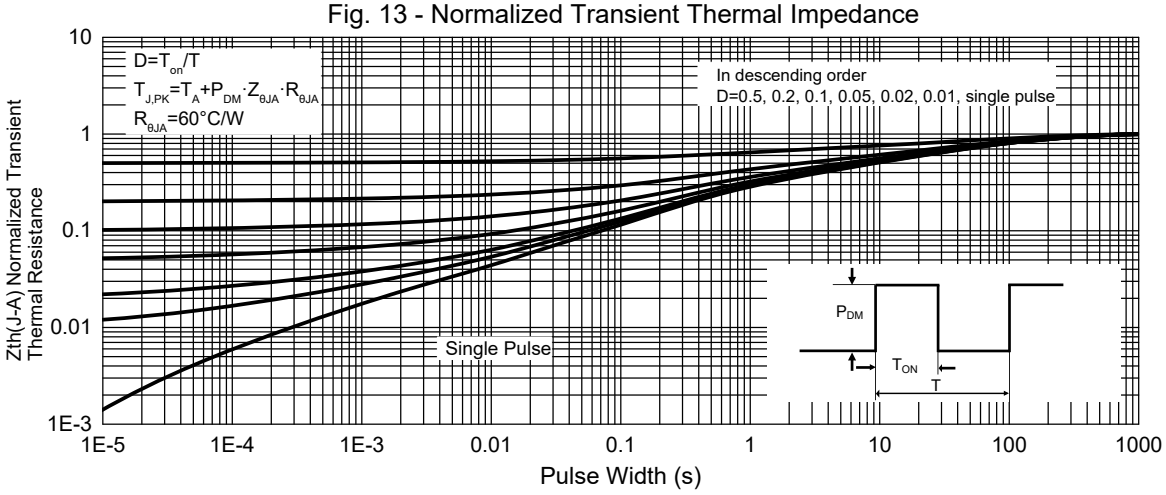


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Micro Commercial Components (MCC):

MCQ12P04A-TP