

Features

- Split Gate Trench MOSFET Technology
- High Density Cell Design For Low $R_{DS(ON)}$
- Moisture Sensitivity Level 3
- Halogen Free. "Green" Device^(Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

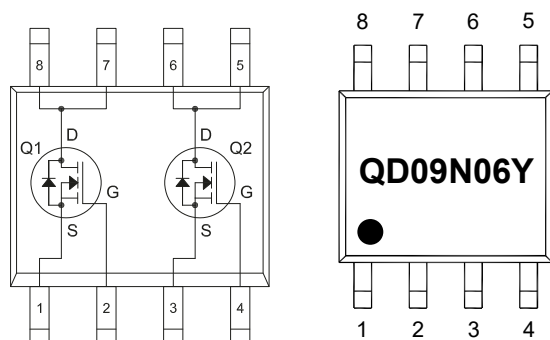
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 75°C/W Junction to Ambient^(Note 2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	9	A
		5.7	
Pulsed Drain Current ^(Note 3)	I_{DM}	36	A
Total Power Dissipation ^(Note 4)	P_D	1.7	W
Single Pulsed Avalanche Energy ^(Note 5)	E_{AS}	50	mJ

Note:

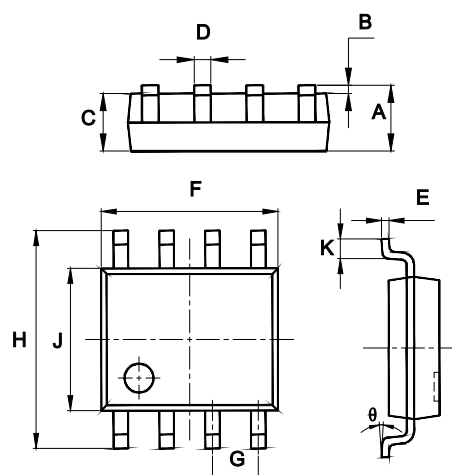
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.
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. $T_J = 25^\circ\text{C}$, $V_{DD} = 50\text{V}$, $V_{GS} = 10\text{V}$, $L = 1\text{mH}$.

Internal Structure and Marking Code



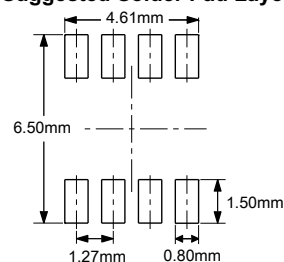
Dual N-Channel Power MOSFET

SOP-8



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 @ 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 =9A		15	20	mΩ
		V _{GS} =4.5V, I _D =5A		18	24	
Gate Resistance	R _g	f=1 MHz, Open drain		1.6		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				9	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =9A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =15A, dI _F /dt=100A/μs		25		ns
Reverse Recovery Charge	Q _{rr}			9.5		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHz		873		pF
Output Capacitance	C _{oss}			159		
Reverse Transfer Capacitance	C _{rss}			6.5		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =15A		16.5		nC
Gate-Source Charge	Q _{gs}			3.9		
Gate-Drain Charge	Q _{gd}			2.5		
Turn-On Delay Time	t _{d(on)}	V _{DD} =30V, V _{GS} =10V, I _{DS} =15A, R _G =3Ω		3.4		ns
Turn-On Rise Time	t _r			40		
Turn-Off Delay Time	t _{d(off)}			18		
Turn-Off Fall Time	t _f			6.6		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

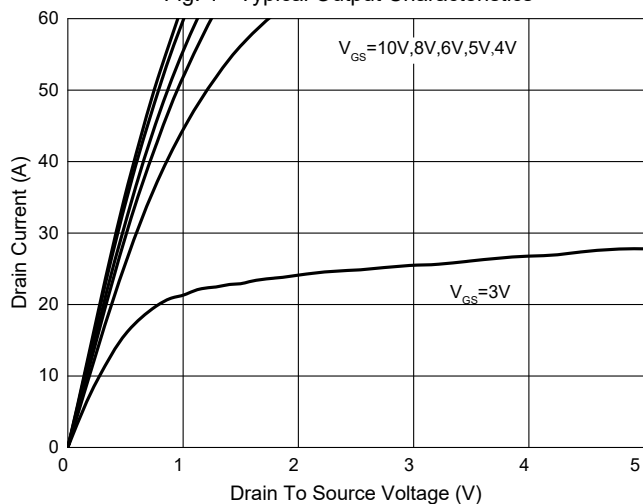


Fig. 2 - Transfer Characteristics

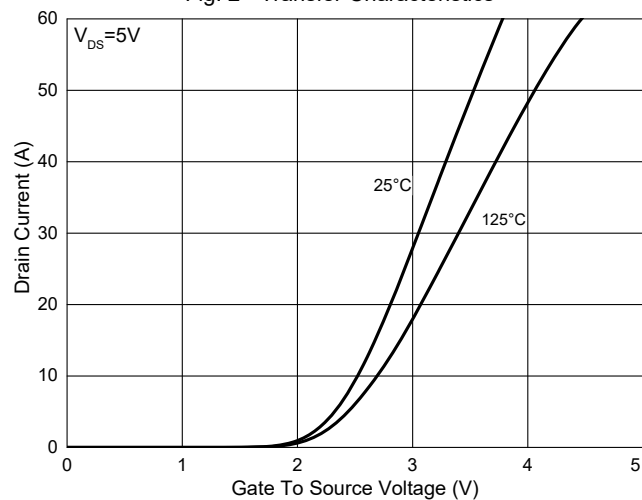


Fig. 3 - $R_{DS(ON)} - V_{GS}$

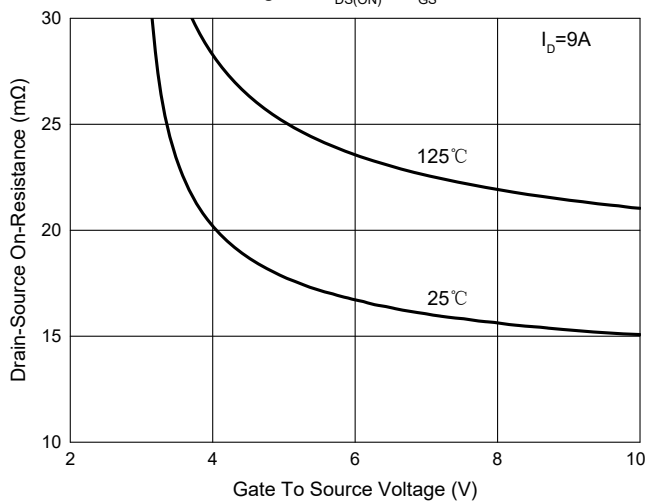


Fig. 4 - $R_{DS(ON)} - I_D$

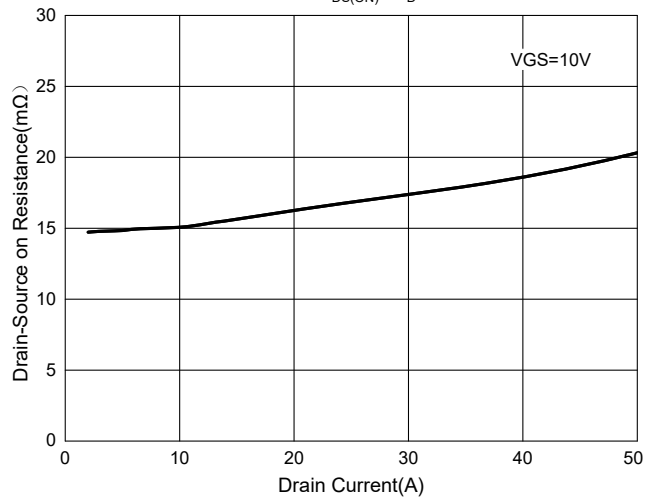


Fig. 5 - Capacitance Characteristics

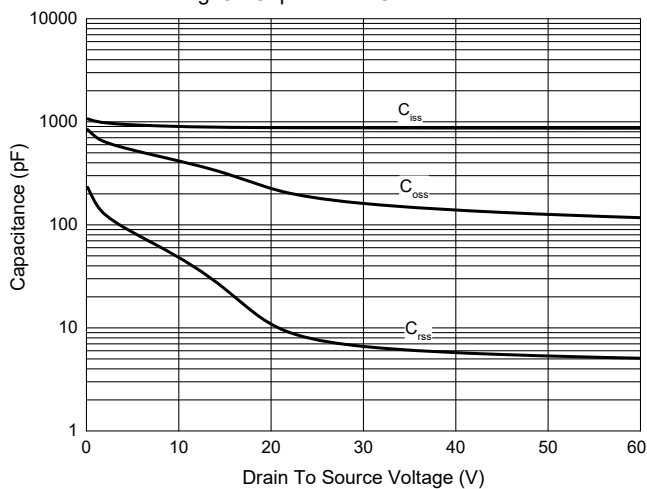
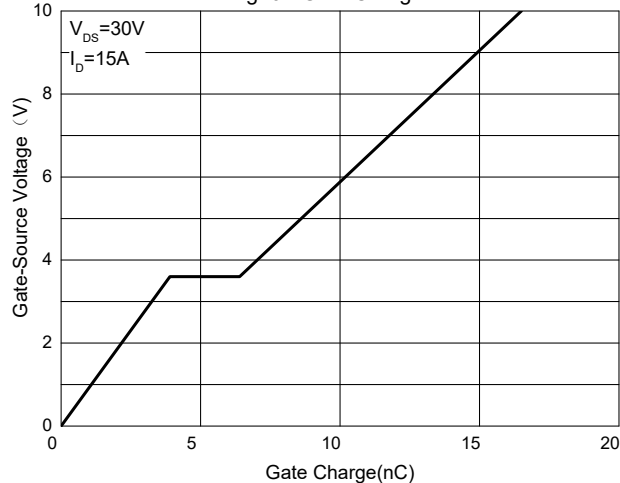


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Nomalized Threshold Voltage

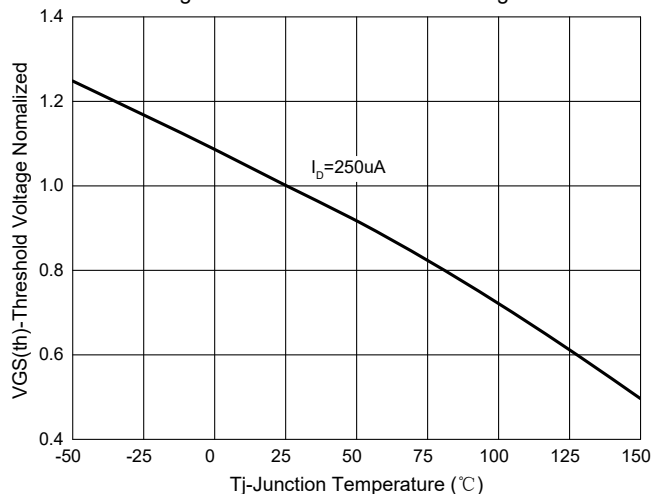


Fig.8-Normalized On Resistance Characteristics

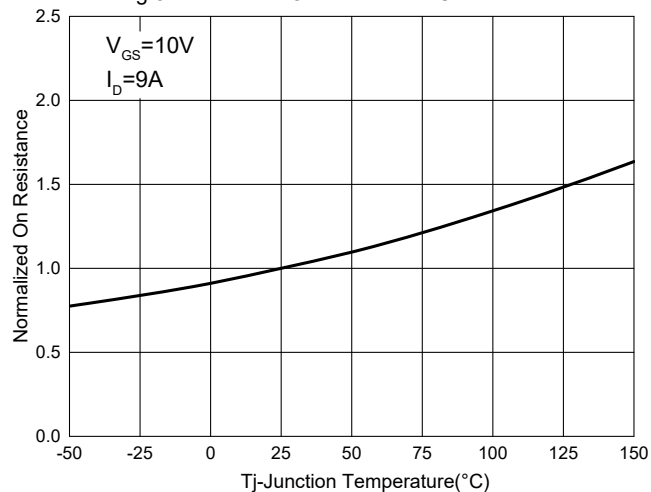


Fig.9 - $I_S - V_{SD}$

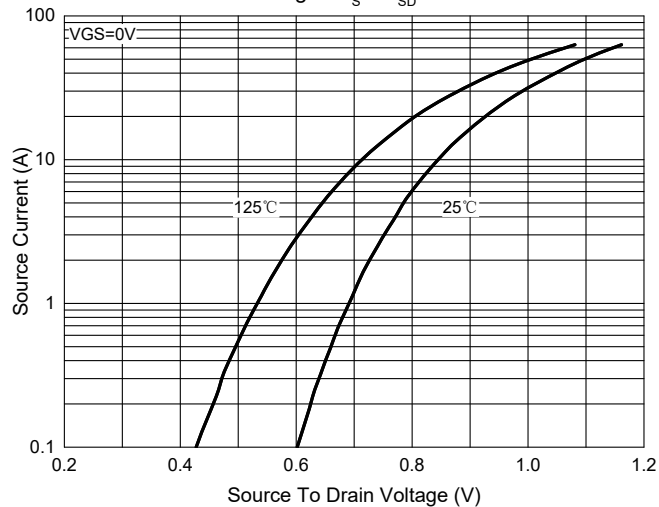


Fig. 10 - Drain Current

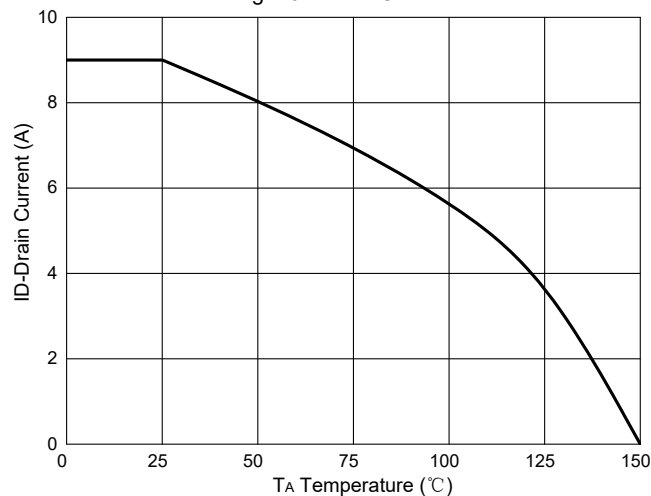
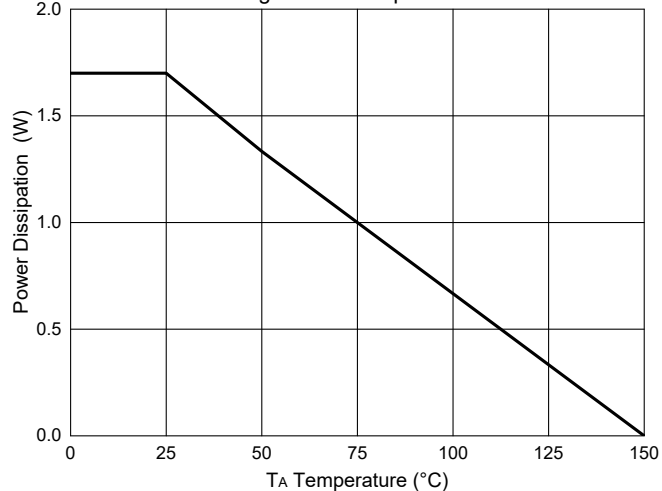


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

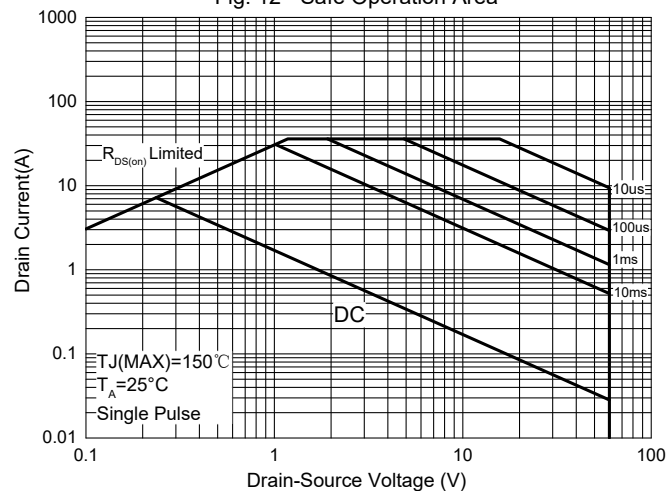
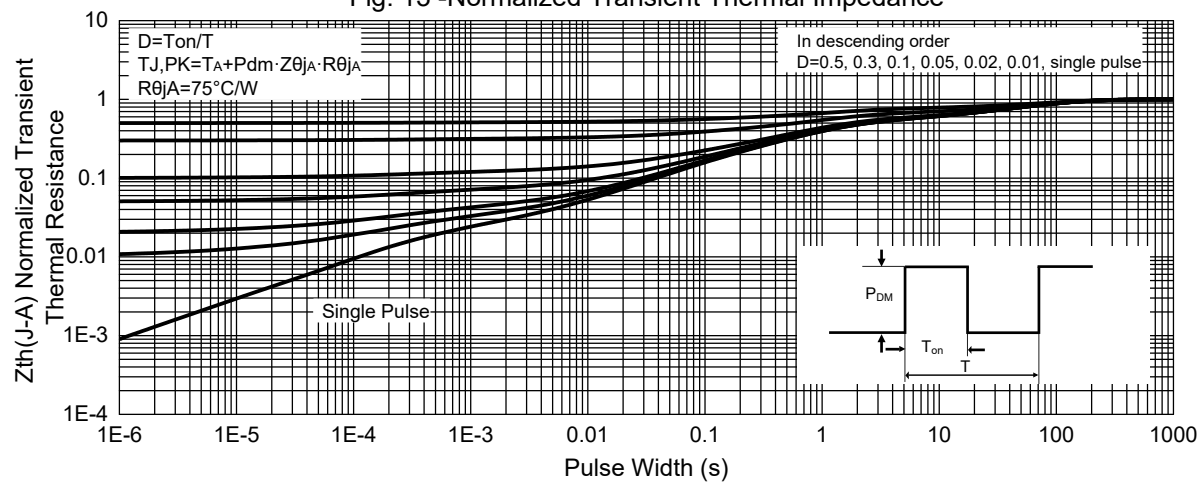


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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