

## Features

- Trench MV MOSFET Technology
- Moisture Sensitivity Level 1
- Halogen Free."Green"Device<sup>(Note1)</sup>
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant<sup>(Note2)</sup>("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

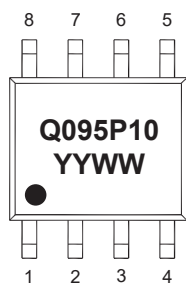
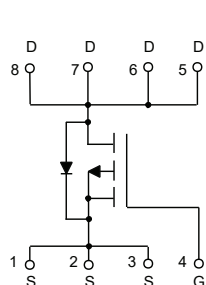
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 65°C/W Junction to Ambient<sup>(Note 3)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	A
		$T_A=100^\circ\text{C}$	
Pulsed Drain Current <sup>(Note 4)</sup>	$I_{DM}$	-12.4	A
Total Power Dissipation <sup>(Note 5)</sup>	$P_D$	1.9	W
Single Pulse Avalanche Energy <sup>(Note6)</sup>	$E_{AS}$	64	mJ

Note:

- Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- High Temperature Solder Exemption Applied, See EU Directive Annex 7(a)-I.
- 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  $T_A=25^\circ\text{C}$ .
- Repetitive rating; pulse width limited by max. junction temperature.
- $P_D$  is based on max. junction temperature, using junction-ambient thermal resistance.
- $T_J=25^\circ\text{C}$ ,  $V_{DD}=-50\text{V}$ ,  $V_{GS}=-10\text{V}$ ,  $R_G=25\Omega$ ,  $L=0.5\text{mH}$

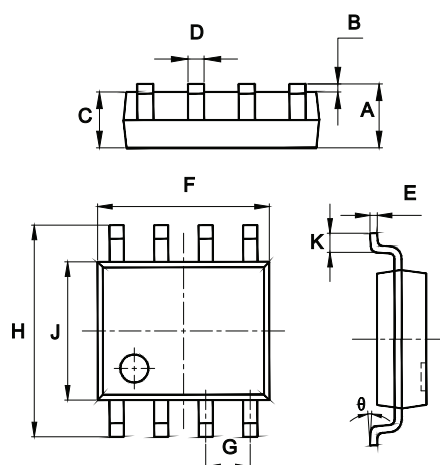
## Internal Structure and Marking Code



4 codes in total  
YY is the year  
WW is the week

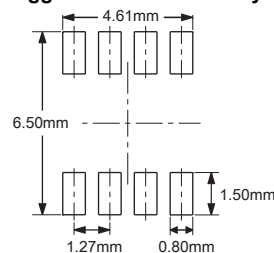
## P-CHANNEL MOSFET

### 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 <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-100			V
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-100V, V <sub>GS</sub> =0V			-1	μA
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.5	-2.0	-2.5	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-3A		72	95	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1.5A		82	110	
Gate Resistance	R <sub>g</sub>	f=1 MHz, Open Drain		11		Ω
Diode Characteristics						
Continuous Body Diode Current	I <sub>S</sub>				-3.1	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-3A			-1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =-3A, dI <sub>F</sub> /dt=100A/μs		25		ns
Reverse Recovery Charge	Q <sub>rr</sub>			35		nC
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-50V,V <sub>GS</sub> =0V,f=1MHz		2100		pF
Output Capacitance	C <sub>oss</sub>			89		
Reverse Transfer Capacitance	C <sub>rss</sub>			65		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-50V,V <sub>GS</sub> =-10V,I <sub>D</sub> =-3A		46		nC
Gate-Source Charge	Q <sub>gs</sub>			5.8		
Gate-Drain Charge	Q <sub>gd</sub>			7		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-50V, V <sub>GS</sub> =-10V, R <sub>G</sub> =3Ω,I <sub>DS</sub> =-3A		8.5		ns
Turn-On Rise Time	t <sub>r</sub>			30.6		
Turn-Off Delay Time	t <sub>d(off)</sub>			116		
Turn-Off Fall Time	t <sub>f</sub>			42		

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

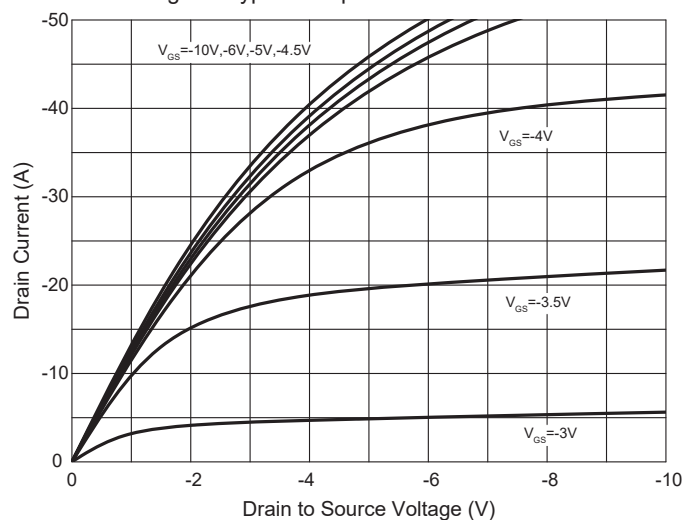


Fig. 2 - Transfer Characteristics

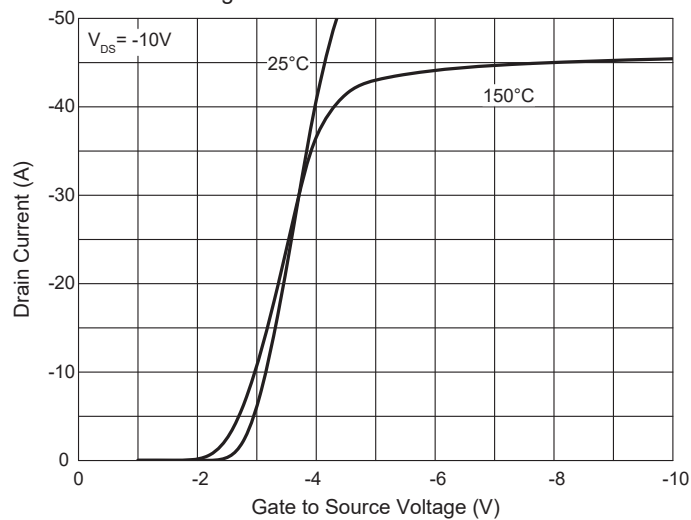


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

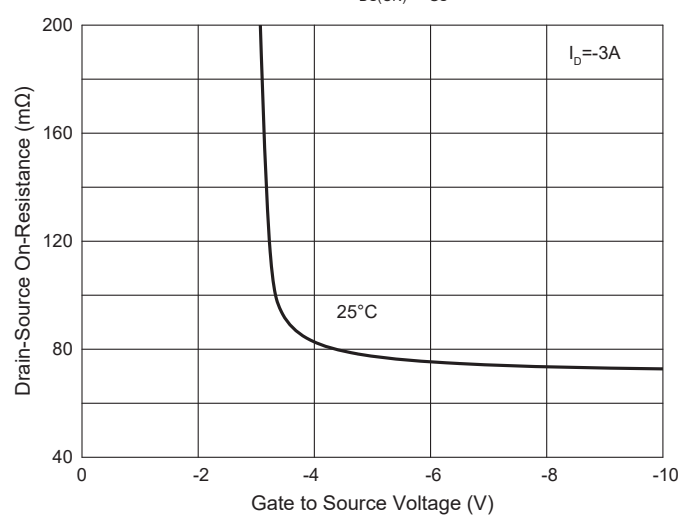


Fig. 4 -  $R_{DS(ON)} - I_D$

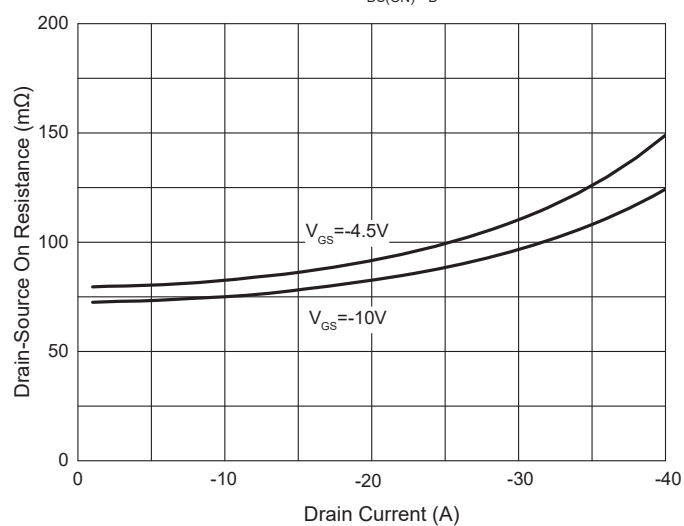


Fig. 5 - Capacitance Characteristics

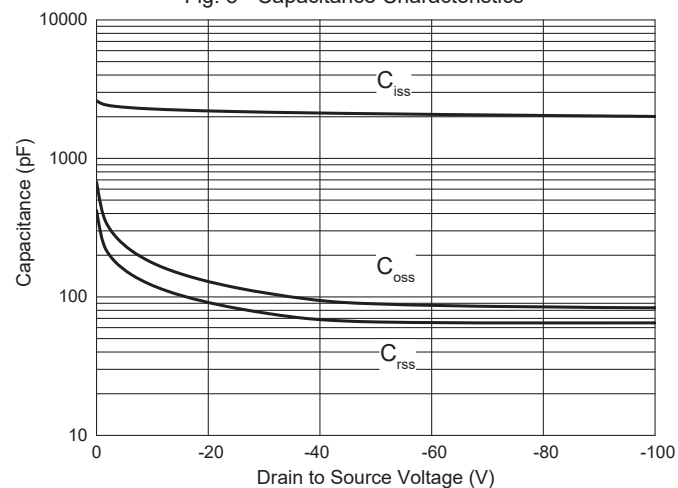
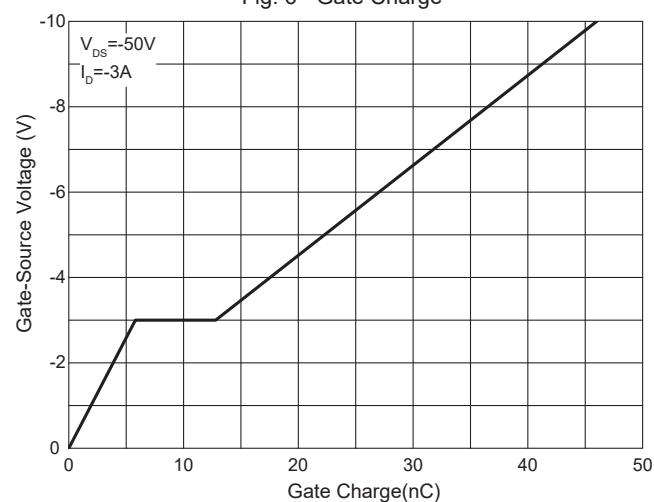


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

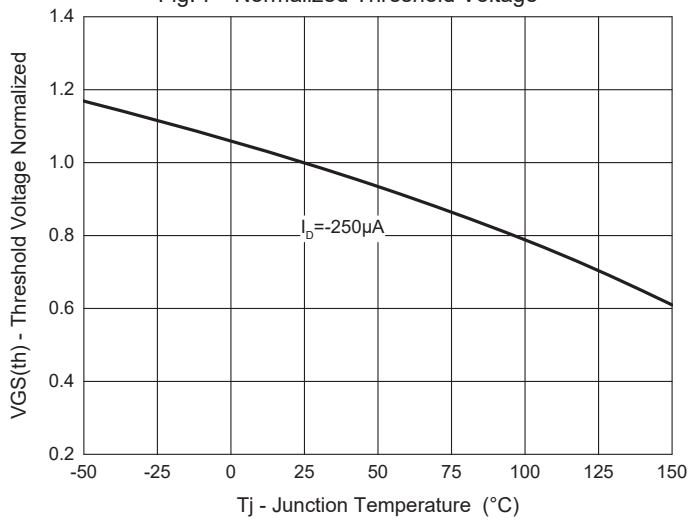


Fig. 8 - Normalized On Resistance Characteristics

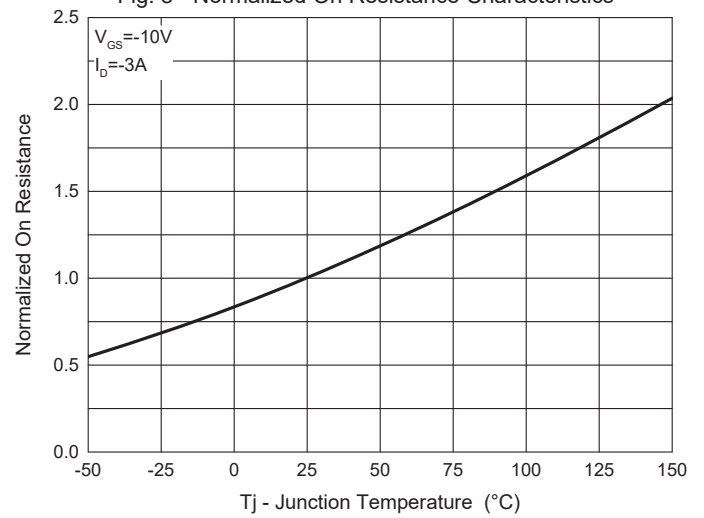


Fig. 9 -  $I_S$ - $V_{SD}$

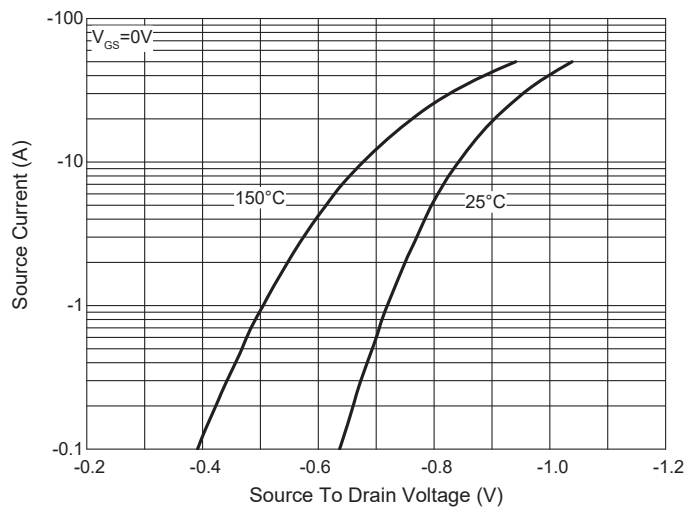


Fig. 10 - Drain Current

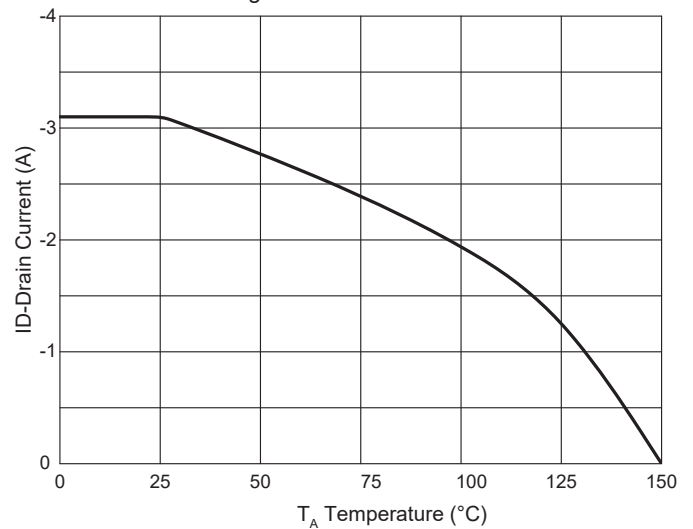
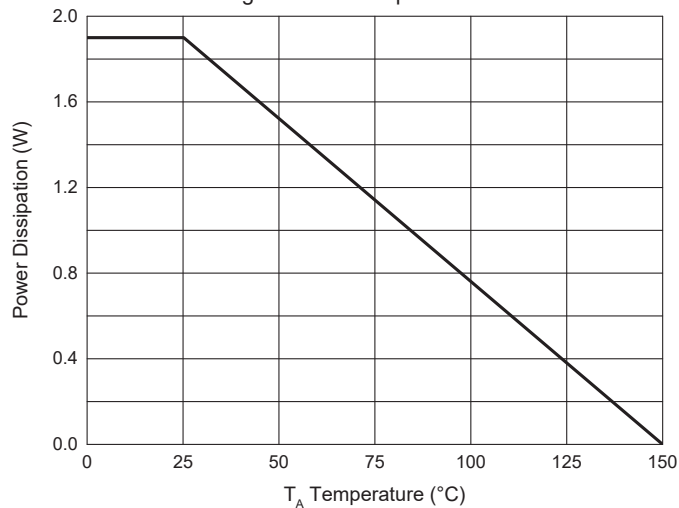


Fig. 11 - PD Dissipation



## Curve Characteristics

Fig. 12 - Safe Operation Area

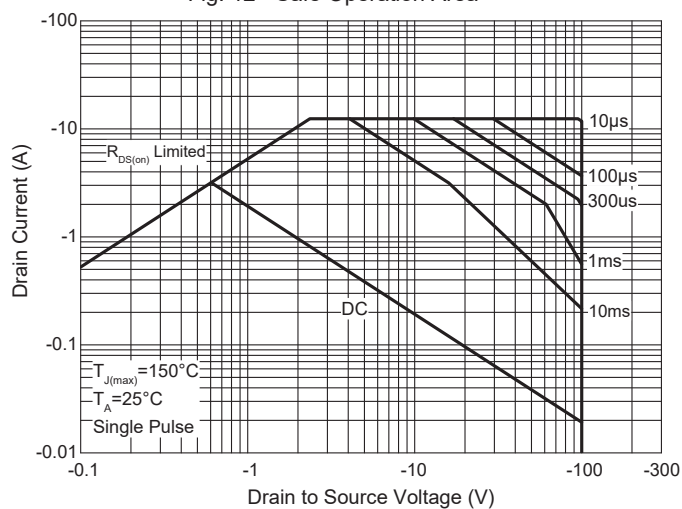
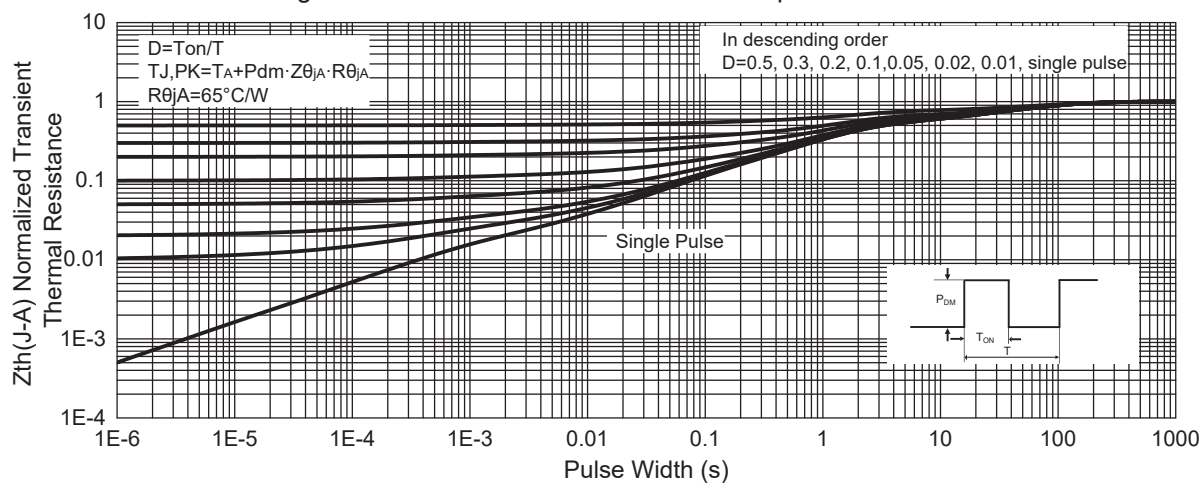


Fig. 13 - Normalized Transient Thermal Impedance



## Ordering Information

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

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