

## Features

- Low  $R_{DS(on)}$  & FOM
- Low  $C_{rss}$
- Moisture Sensitivity Level 3
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- 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

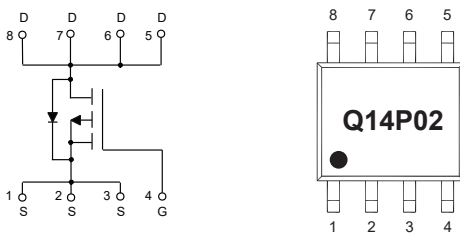
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient( $t \leq 10s$ )
- Thermal Resistance: 75°C/W Junction to Ambient(Steady-State)
- Thermal Resistance: 24°C/W Junction to Lead(Steady-State)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Continuous Drain Current	$I_D$	-14	A
Pulsed Drain Current <sup>(2)</sup>	$I_{DM}$	-56	A
Total Power Dissipation <sup>(3)</sup>	$P_D$	1.6	W
Single Pulsed Avalanche Energy <sup>(4)</sup>	$E_{AS}$	210	mJ

Note:

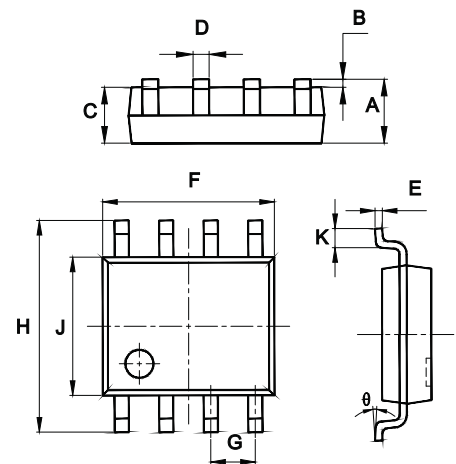
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Repetitive rating; pulse width limited by max. junction temperature.
3.  $P_D$  is based on junction temperature, using junction-ambient thermal resistance,  $t \leq 10s$
4.  $V_{DD} = -50V$ ,  $V_{GS} = -4.5V$ ,  $L = 0.5mH$ ,  $I_{AS} = -29A$ .

## Internal Structure and Marking Code



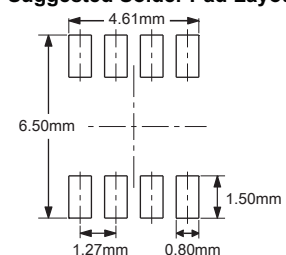
# P-CHANNEL MOSFET

## 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	
$\theta$	0°	8°	0°	8°	

### 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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 10V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4		-1	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-13.5A$		6.5	8.5	m $\Omega$
		$V_{GS}=-2.5V, I_D=-12A$		8	10.5	
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-14	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-13.5A$			-1.2	V
Reverse Recovery Time	$t_{rr}$	$I_S=-1A, di/dt=100A/\mu s$		76		ns
Reverse Recovery Charge	$Q_{rr}$			29		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$		4500		pF
Output Capacitance	$C_{oss}$			545		
Reverse Transfer Capacitance	$C_{rss}$			470		
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-1A$		47.6		nC
Gate-Source Charge	$Q_{gs}$			8.5		
Gate-Drain Charge	$Q_{gd}$			8.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-1A, R_G=6\Omega$		15		ns
Turn-On Rise Time	$t_r$			25		
Turn-Off Delay Time	$t_{d(off)}$			230		
Turn-Off Fall Time	$t_f$			110		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

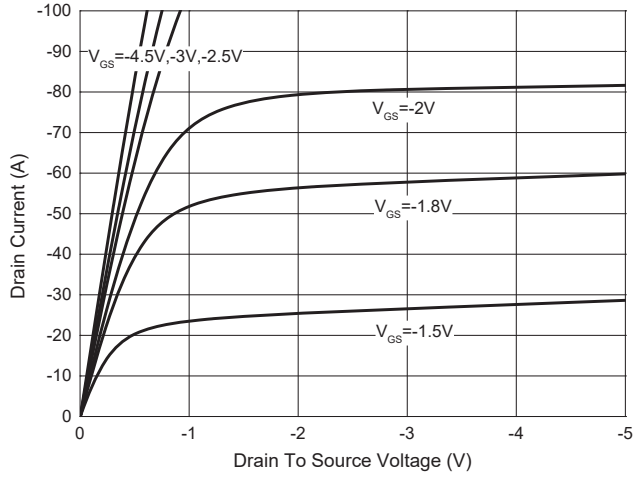


Fig. 2 - Transfer Characteristics

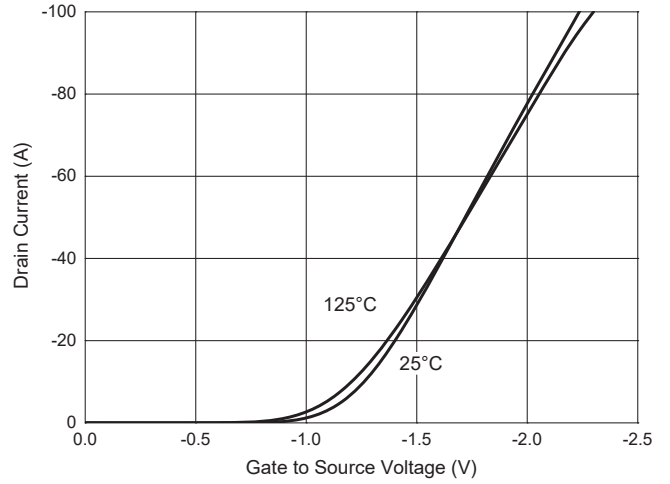


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

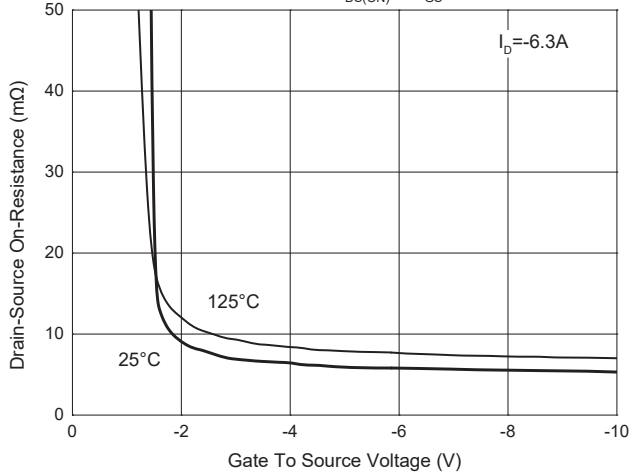


Fig. 4 -  $I_s - V_{SD}$

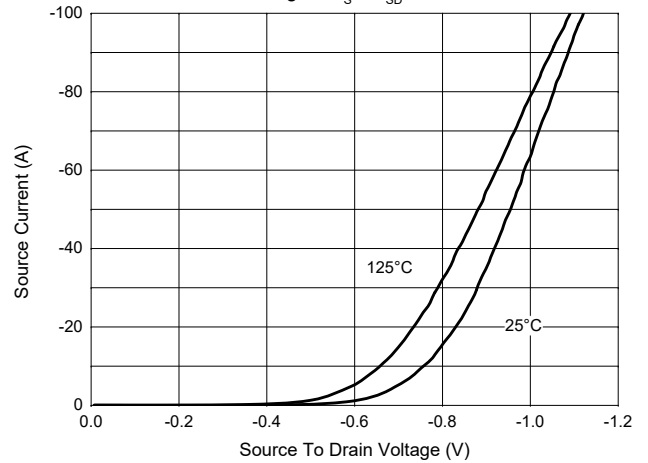


Fig. 5 -  $R_{DS(ON)}$

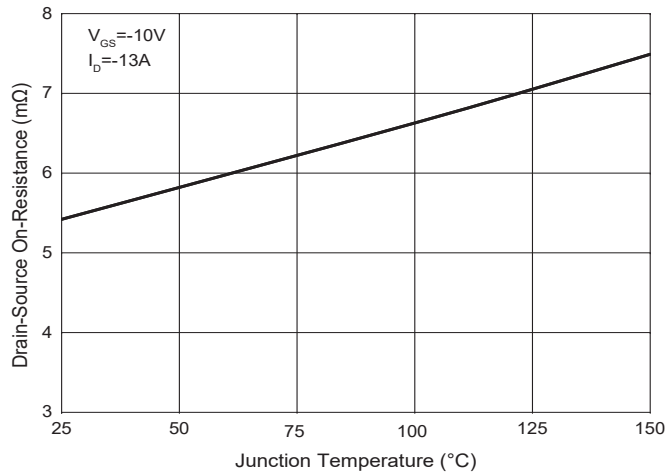
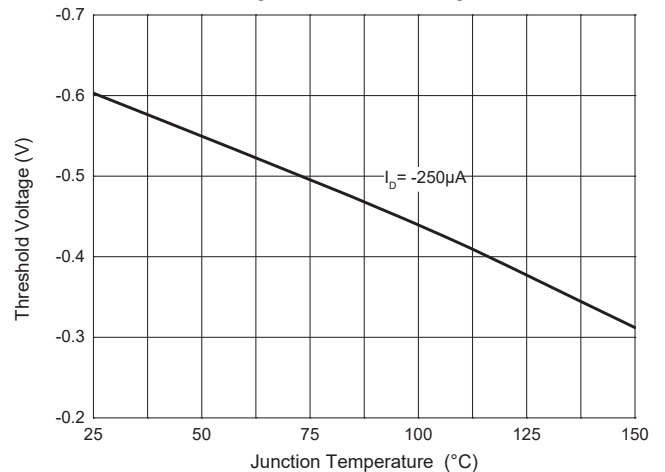


Fig. 6 - Threshold Voltage



Curve Characteristics

Fig. 7 - Capacitance Characteristics

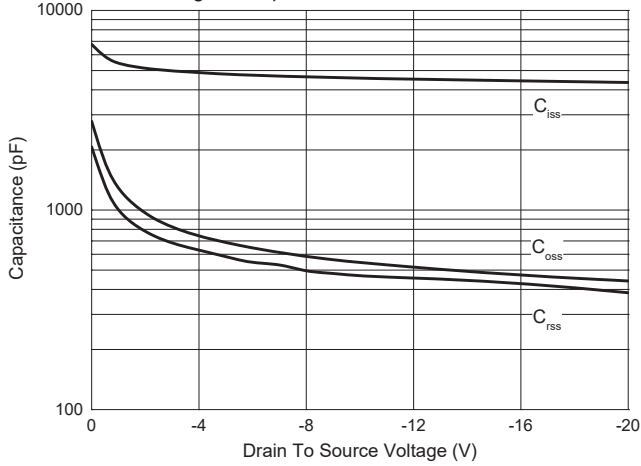


Fig. 8 - Gate Charge

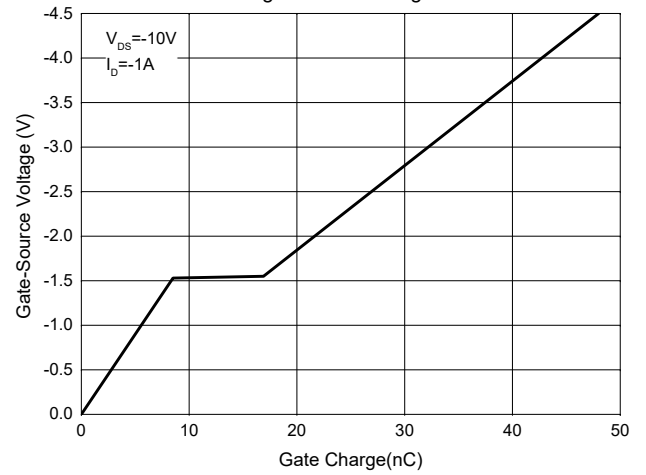


Fig. 9 - Safe Operation Area

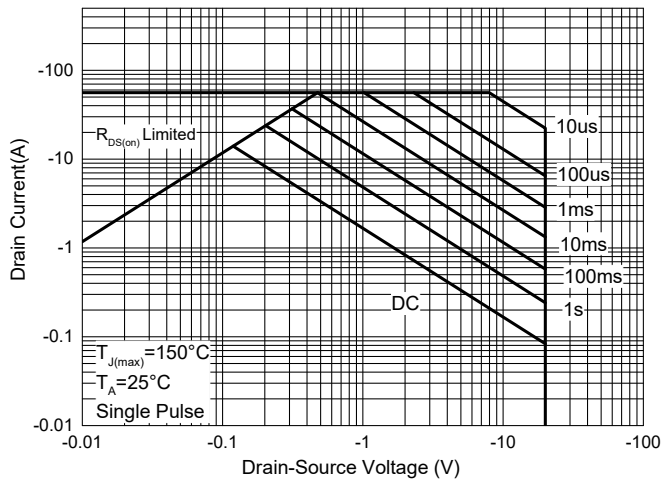
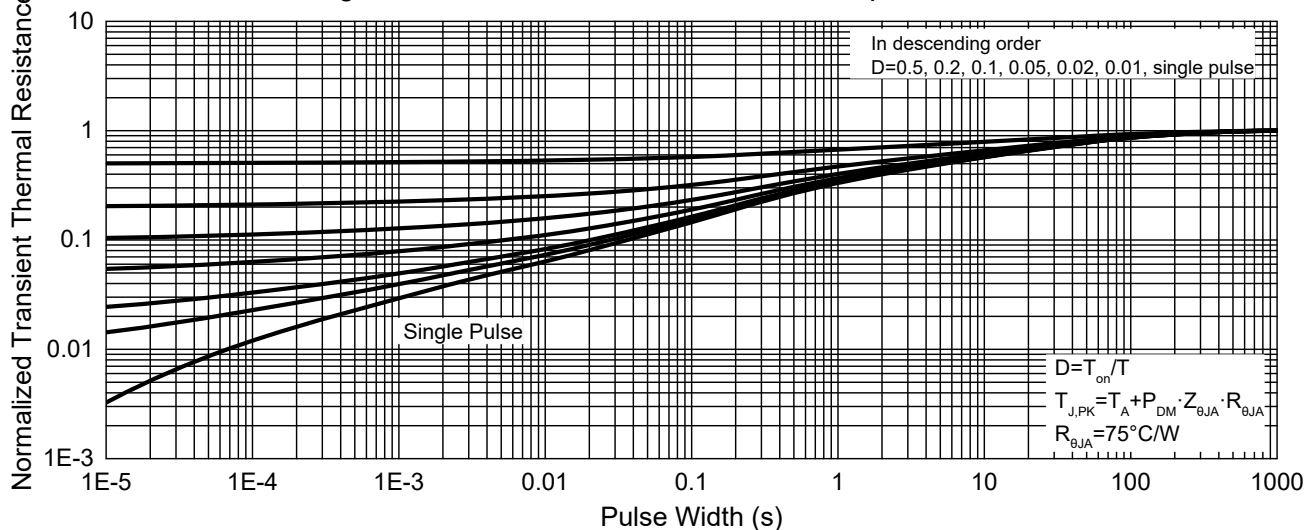


Fig. 10 - Normalized Transient Thermal Impedance



## Ordering Information

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

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