

**Features**

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

**Maximum Ratings**

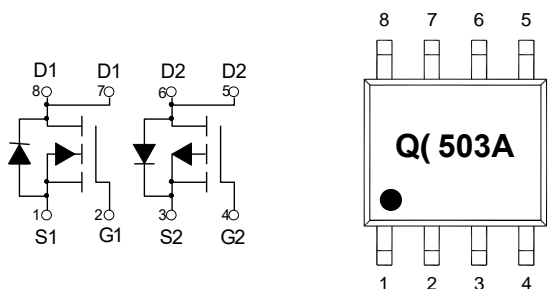
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 62.5°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit	
Total Power Dissipation	$P_D$	2.0	W	
<b>N-Channel MOSFET</b>				
Drain-Source Voltage	$V_{DS}$	30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current (Note 2)	$I_D$	$T_A=25^\circ\text{C}$	6.5	A
		$T_A=70^\circ\text{C}$	5.4	A
Pulsed Drain Current (Note 3)	$I_{DM}$	26	A	
<b>P-Channel MOSFET</b>				
Drain-Source Voltage	$V_{DS}$	-30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current (Note 2)	$I_D$	$T_A=25^\circ\text{C}$	-5.0	A
		$T_A=70^\circ\text{C}$	-4.1	A
Pulsed Drain Current (Note 3)	$I_{DM}$	-20	A	

Note:

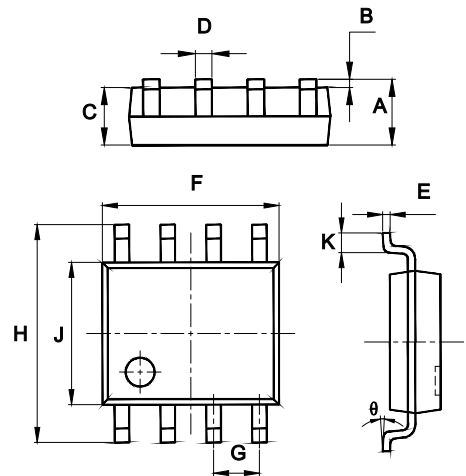
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. These Tests Are Performed With Infinite Heat Sink.
3. Pulse Width By Max. Junction Temperature.

**Internal Structure and Marking Code**



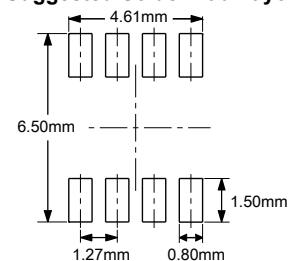
**Dual  
N&P-Channel  
MOSFET**

**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°	8°	0°	8°	

**Suggested Solder Pad Layout**



**N-Channel MOSFET Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.6	2.4	V
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$			30	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$			40	
Diode Forward Voltage <sup>(Note 4)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=5A$			1.2	V
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=5A$	4			S
<b>Dynamic Characteristics</b>						
Input Capacitance <sup>(Note 5)</sup>	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		255		pF
Output Capacitance <sup>(Note 5)</sup>	$C_{oss}$			45		
Reverse Transfer Capacitance <sup>(Note 5)</sup>	$C_{rss}$			35		
Total Gate Charge <sup>(Note 4)</sup>	$Q_g$	$V_{DD}=15V, V_{GS}=10V, I_D=5A$		5.2		nC
Gate-Source Charge <sup>(Note 5)</sup>	$Q_{gs}$			0.85		
Gate-Drain Charge <sup>(Note 5)</sup>	$Q_{gd}$			1.3		
Turn-On Delay Time <sup>(Note 4)</sup>	$t_{d(on)}$	$V_{DD}=15V, V_{GS}=10V$ $R_L=2.5\Omega, R_G=3.3\Omega$		4.5		ns
Turn-On Rise Time <sup>(Note 5)</sup>	$t_r$			2.5		
Turn-Off Delay Time <sup>(Note 5)</sup>	$t_{d(off)}$			14.5		
Turn-Off Fall Time <sup>(Note 5)</sup>	$t_f$			3.5		

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.6	-2.5	V
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4A$			60	m $\Omega$
		$V_{GS}=-4.5V, I_D=-4A$			90	
Diode Forward Voltage <sup>(Note 4)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=-5A$			-1.2	V
Forward Transconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-5A$	4			S
<b>Dynamic Characteristics</b>						
Input Capacitance <sup>(Note 5)</sup>	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		520		pF
Output Capacitance <sup>(Note 5)</sup>	$C_{oss}$			100		
Reverse Transfer Capacitance <sup>(Note 5)</sup>	$C_{rss}$			65		
Total Gate Charge <sup>(Note 4)</sup>	$Q_g$	$V_{DD}=-15V, V_{GS}=-10V, I_D=-5A$		9.2		nC
Gate-Source Charge <sup>(Note 5)</sup>	$Q_{gs}$			1.6		
Gate-Drain Charge <sup>(Note 5)</sup>	$Q_{gd}$			2.2		
Turn-On Delay Time <sup>(Note 4)</sup>	$t_{d(on)}$	$V_{DD}=-15V, V_{GS}=-10V$ $RL=2.3\Omega, RG=6\Omega$		7.5		ns
Turn-On Rise Time <sup>(Note 5)</sup>	$t_r$			5.5		
Turn-Off Delay Time <sup>(Note 5)</sup>	$t_{d(off)}$			19		
Turn-Off Fall Time <sup>(Note 5)</sup>	$t_f$			7		

Note 4. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

5. Guaranteed by Design, Not Subject to Production Testing.

## N-Channel MOSFET Curve Characteristics

Fig. 1 - Output Characteristics

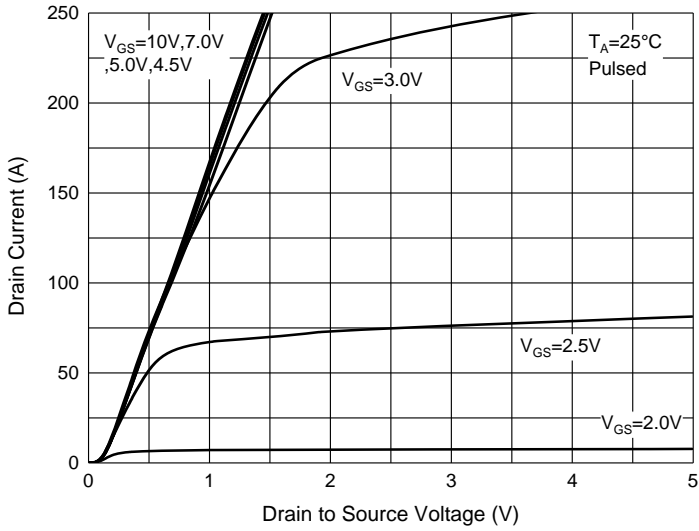


Fig. 2 - Transfer Characteristics

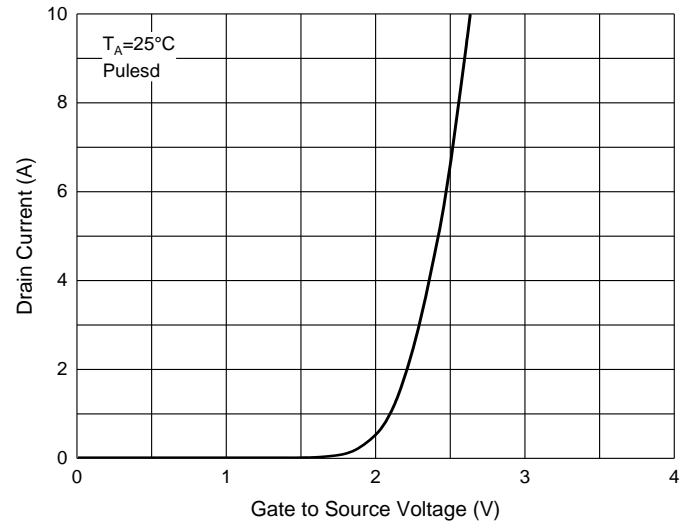


Fig. 3 -  $R_{DS(ON)} - I_D$

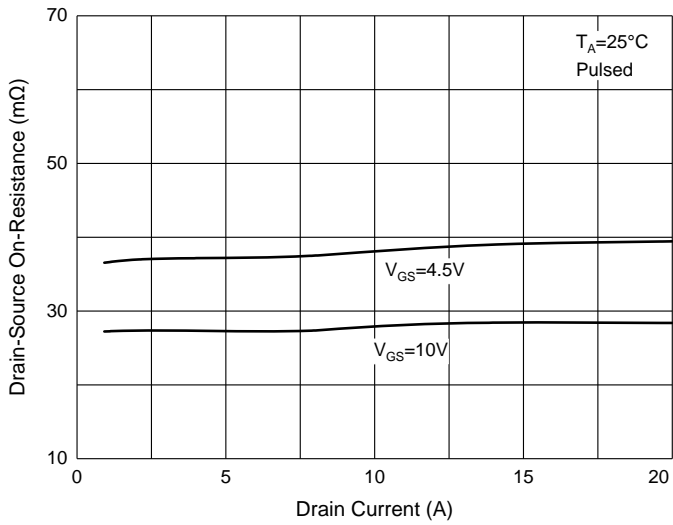


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

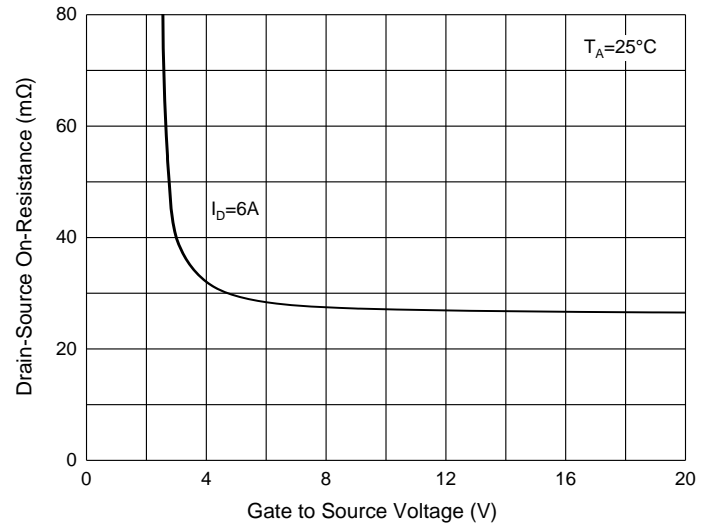
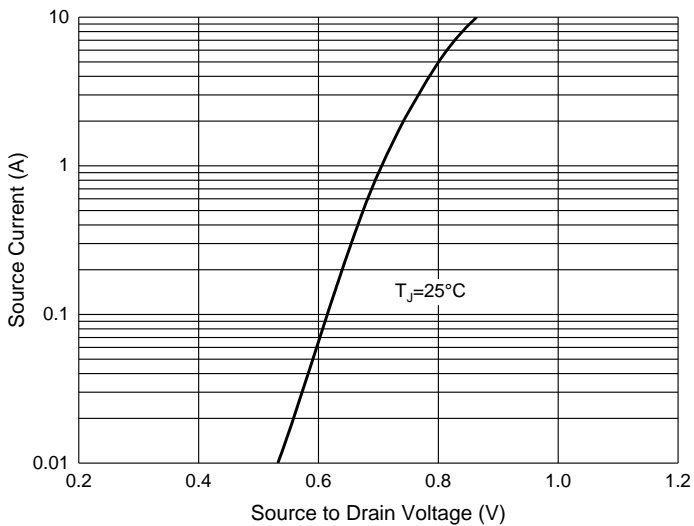


Fig. 5 -  $I_S - V_{SD}$



## P-Channel MOSFET Curve Characteristics

Fig. 1 - Output Characteristics

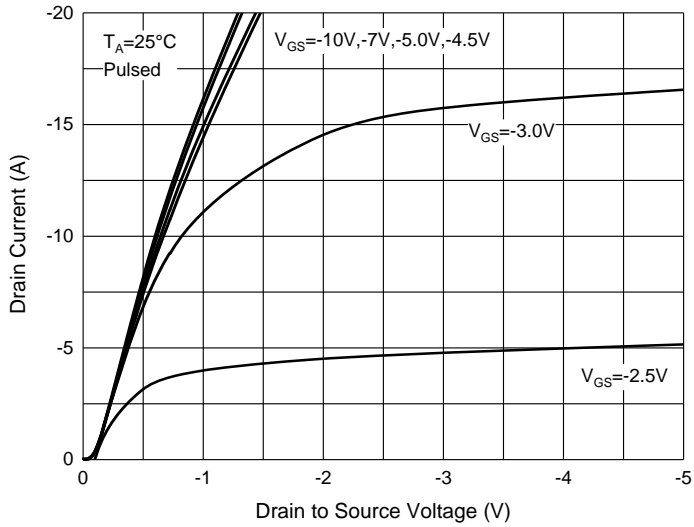


Fig. 2 - Transfer Characteristics

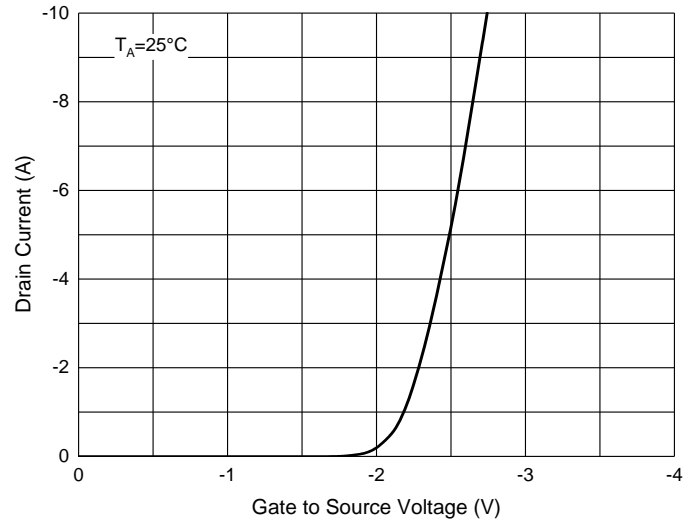


Fig. 3 -  $R_{DS(ON)} - I_D$

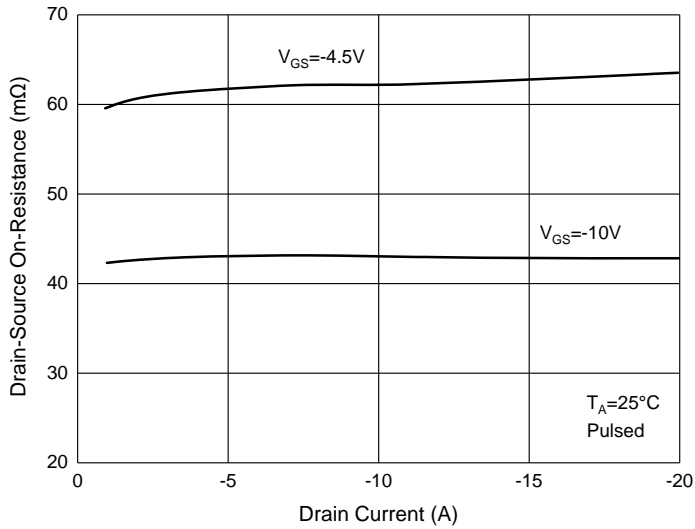


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

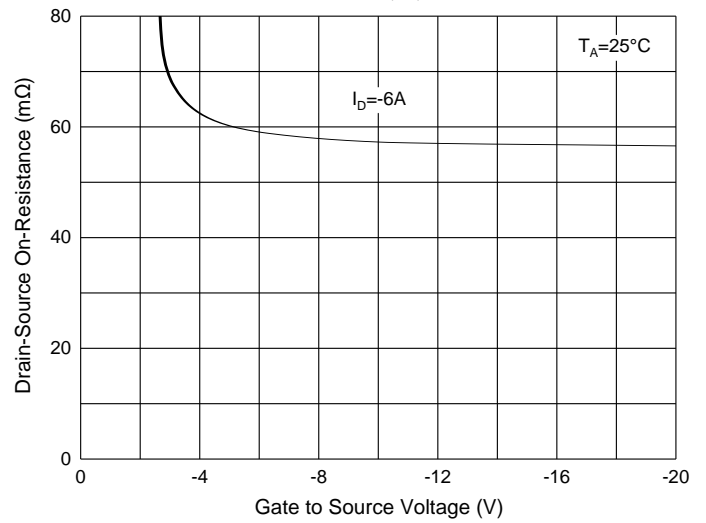
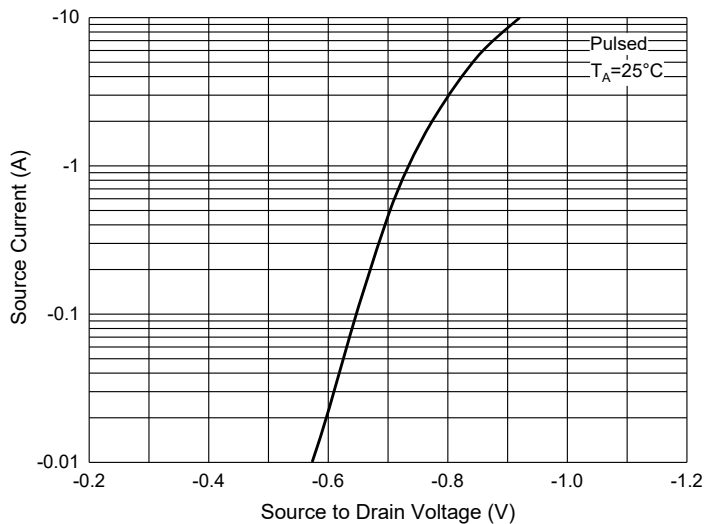


Fig. 5 -  $I_S - V_{SD}$



## Ordering Information

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

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