

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 3
- Halogen Free. "Green" Device (Note 1)

Maximum Ratings

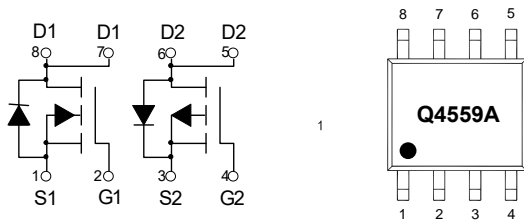
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 62.5°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Total Power Dissipation	P_D	2.0	W
N-Channel MOSFET			
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Note 2)	I_D	4.5	A
Pulsed Drain Current (Note 3)	I_{DM}	18	A
P-Channel MOSFET			
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Note 2)	I_D	-3.5	A
Pulsed Drain Current (Note 3)	I_{DM}	-14	A

Notes:

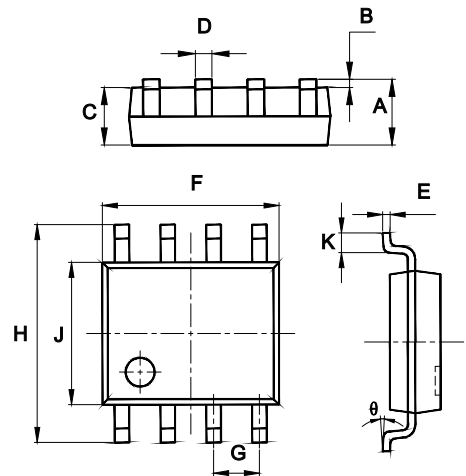
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Surface Mounted on FR4 Board Using the Minimum Recommended Pad Size.
3. Pulse Test : Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.

Internal Structure and Marking Code



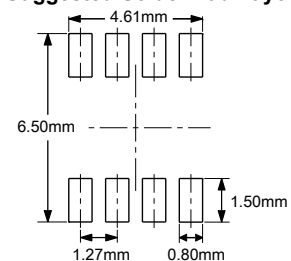
**Dual
N&P-Channel
MOSFET**

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



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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage ^(Note 3)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
Drain-Source On-Resistance ^(Note 3)	$R_{DS(on)}$	$V_{GS}=10V, I_D=4.3A$		34	45	m Ω
		$V_{GS}=4.5V, I_D=3.9A$		40	50	
Dynamic Characteristics^(Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		850		pF
Output Capacitance	C_{oss}			53		
Reverse Transfer Capacitance	C_{rss}			42		
Total Gate Charge	Q_g	$V_{DD}=30V, V_{GS}=10V, I_D=10A$		20.62		nC
Gate-Source Charge	Q_{gs}			4.44		
Gate-Drain Charge	Q_{gd}			4.02		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=10A, R_G=3\Omega, V_{GS}=10V$		6.2		ns
Turn-On Rise Time	t_r			26.2		
Turn-Off Delay Time	$t_{d(off)}$			17		
Turn-Off Fall Time	t_f			30		
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C=25^\circ C$			4.5	A
Pulsed Diode Forward Current	I_{SM}				18	
Body Diode Voltage	V_{SD}	$I_S=1.7A, V_{GS}=0V$			1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_F=10A, di/dt=100A/\mu s$		26		ns
Reverse Recovery Charge	Q_{rr}				3.2	nC

Note 4. Guaranteed by Design, Not Subject to Production Testing.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$			-1	μA
Gate-Threshold Voltage ^(Note 3)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.8	-2.5	V
Drain-Source On-Resistance ^(Note 3)	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-3.1A$		65	80	m Ω
		$V_{GS}=-4.5V, I_D=-3.1A$		90	115	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-2A$			-1.2	V
Dynamic Characteristics^(Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		505		pF
Output Capacitance	C_{oss}			133		
Reverse Transfer Capacitance	C_{rss}			30		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DD}=-30V, V_{GS}=-4.5V, I_D=-3.1A$		4.27		nC
Gate-Source Charge	Q_{gs}			2.39		
Gate-Drain Charge	Q_{gd}			1.1		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-30V, V_{GEN}=-4.5V, I_D=-2.4A, R_G=1\Omega$		11		ns
Turn-On Rise Time	t_r			33.8		
Turn-Off Delay Time	$t_{d(off)}$			12.4		
Turn-Off Fall Time	t_f			23.2		

N-Channel MOSFET Curve Characteristics

Fig. 1 - Typical Output Characteristics

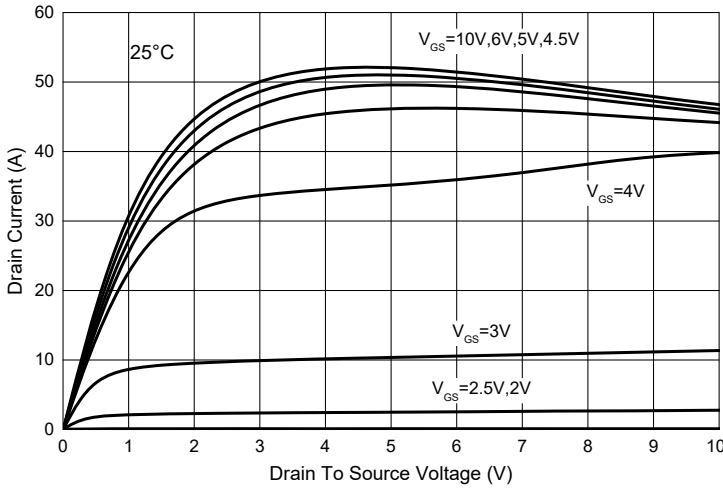


Fig. 2 - Transfer Characteristics

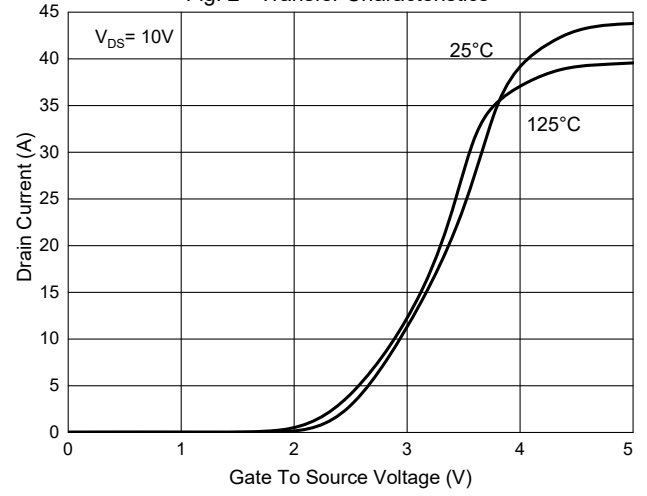


Fig. 3 - $R_{DS(ON)}$ - I_D

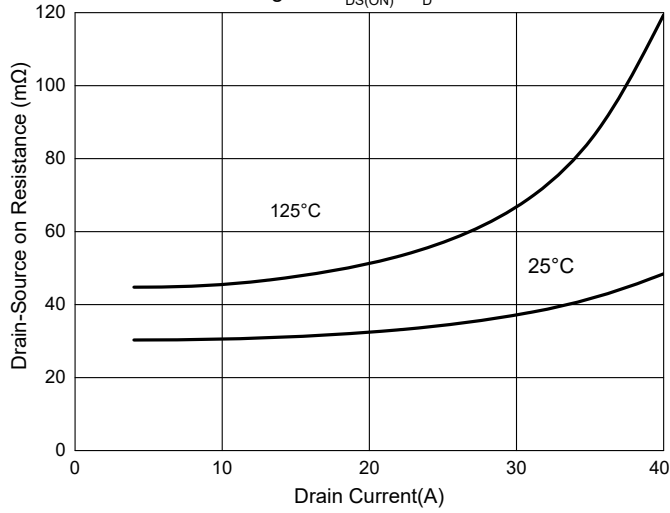


Fig. 4 - $R_{DS(ON)}$ - V_{GS}

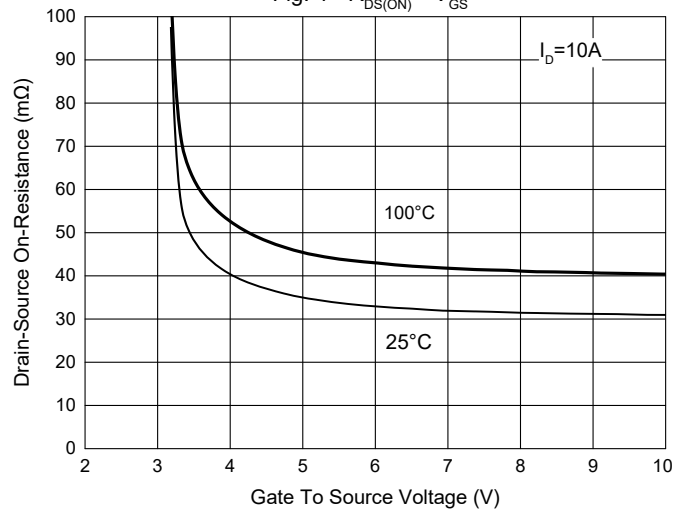


Fig. 5 - Normalized On Resistance Characteristics

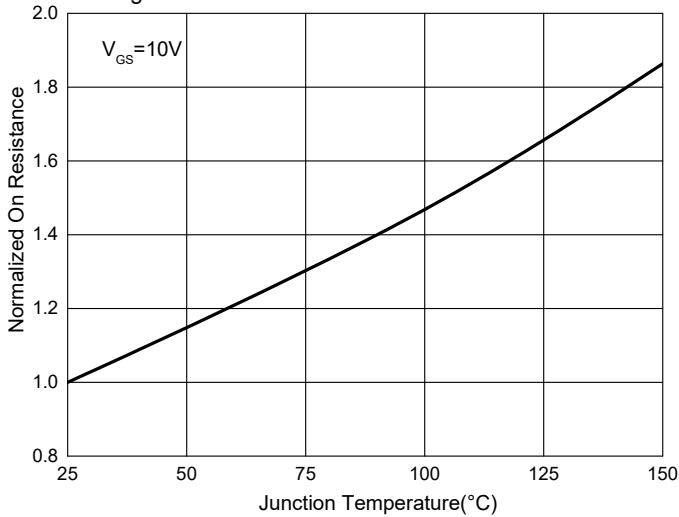
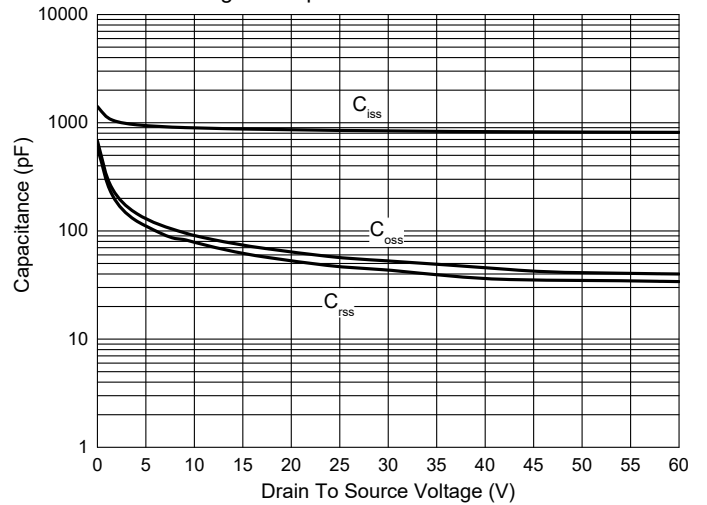


Fig. 6 - Capacitance Characteristics



P-Channel MOSFET Curve Characteristics

Fig. 1 - Typical Output Characteristics

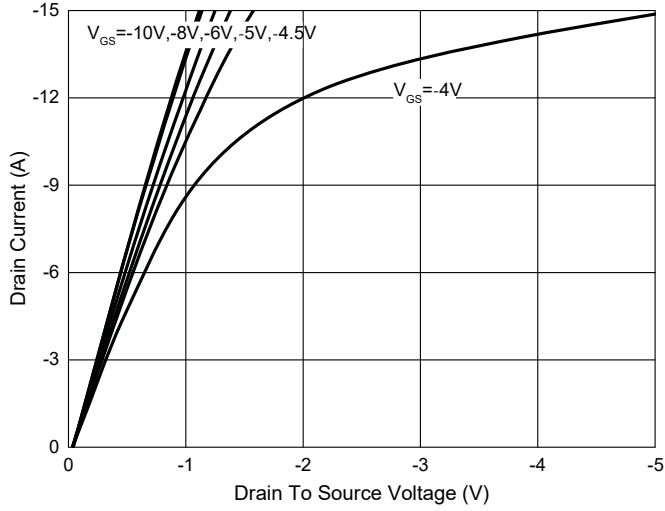


Fig. 2 - Transfer Characteristics

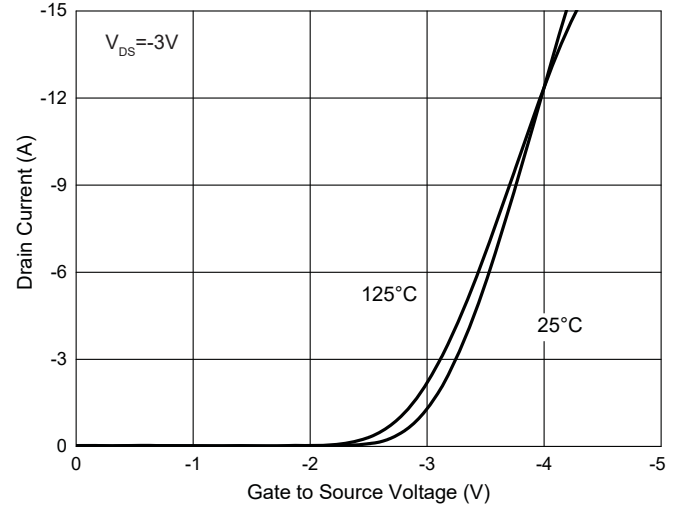


Fig.3- $R_{DS(ON)}$ — I_D

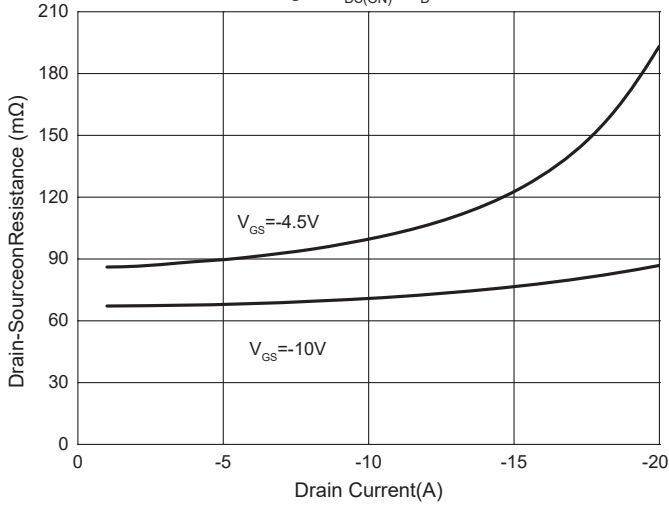


Fig. 4 - $R_{DS(ON)}$ — V_{GS}

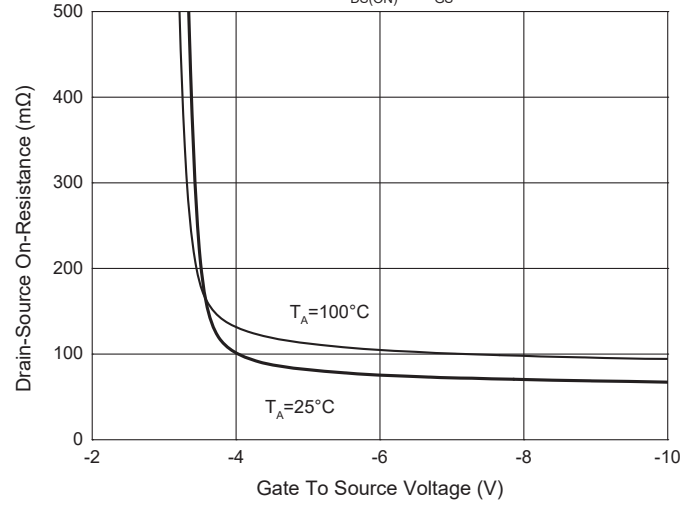


Fig.5-Normalized On Resistance Characteristics

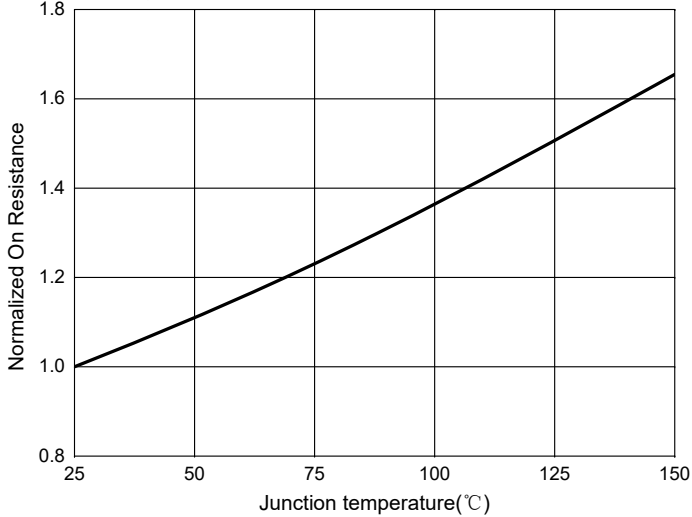
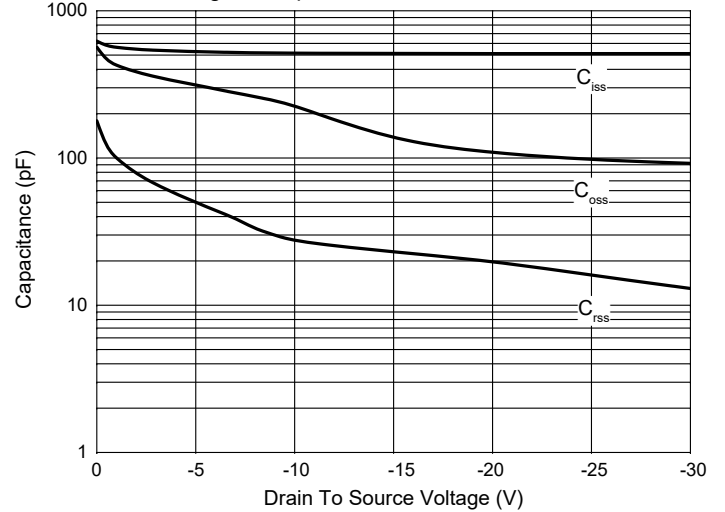


Fig. 6 - Capacitance Characteristics



Ordering Information

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

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