



PE2606

DESCRIPTION

The PE2606 uses advanced trench technology MOSFET to provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFET may be used in power inverters, and other applications.

GENERAL FEATURES

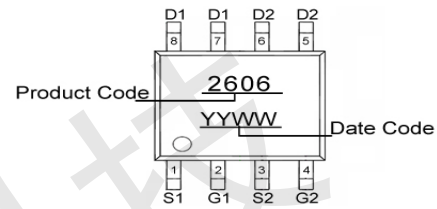
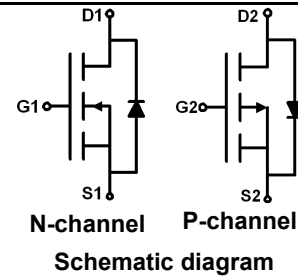
● N-Channel

$V_{DS} = 20V, I_D = 6.8A$
 $R_{DS(ON)} < 21m\Omega @ V_{GS}=4.5V$
 $R_{DS(ON)} < 28m\Omega @ V_{GS}=2.5V$

● P-Channel

$V_{DS} = -20V, I_D = -7A$
 $R_{DS(ON)} < 35m\Omega @ V_{GS}=-4.5V$
 $R_{DS(ON)} < 45m\Omega @ V_{GS}=-2.5V$

- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package



ABSOLUTE MAXIMUM RATINGS($T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V_{DS}	20	-20	V
Gate-Source Voltage		V_{GS}	± 12	± 12	V
Continuous Drain Current	$T_A=25^\circ C$	I_D	6.8	-7	A
	$T_A=70^\circ C$		4.5	-4.8	
Pulsed Drain Current (Note 1)		I_{DM}	20	-22	A
Maximum Power Dissipation	$T_A=25^\circ C$	P_D	2.0	2.0	W
	$T_A=70^\circ C$		1.44	1.44	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 To 150	-55 To 150	$^\circ C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note2)	$R_{\theta JA}$	N-Ch	62.5	$^\circ C/W$
		P-Ch	62.5	



N-CHANNEL Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20	22	-	V

Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.65	1.2	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=6.0A$	-	17	21	m Ω
		$V_{GS}=2.5V, I_D=5.0A$	-	21	28	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=4A$	-	10	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{ISS}	$V_{DS}=8V, V_{GS}=0V,$ $F=1.0MHz$	-	500	-	PF
Output Capacitance	C_{OSS}		-	300	-	PF
Reverse Transfer Capacitance	C_{RSS}		-	140	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=1A$ $V_{GS}=4.5V, R_{GEN}=6\Omega$	-	20	40	nS
Turn-on Rise Time	t_r		-	18	40	nS
Turn-Off Delay Time	$t_{d(off)}$		-	60	108	nS
Turn-Off Fall Time	t_f		-	28	56	nS
Total Gate Charge	Q_g	$V_{DS}=10V, I_D=3A, V_{GS}=4.5V$	-	10	15	nC
Gate-Source Charge	Q_{gs}		-	2.3	-	nC
Gate-Drain Charge	Q_{gd}		-	2.9	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A$	-	-	1.2	V
Diode Forward Current	I_S		-	-	4.5	A

P-CHANNEL Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

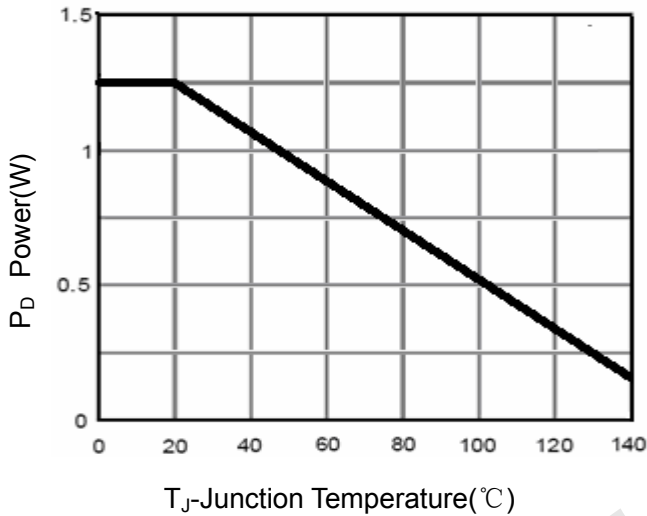
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-	-18	-	V



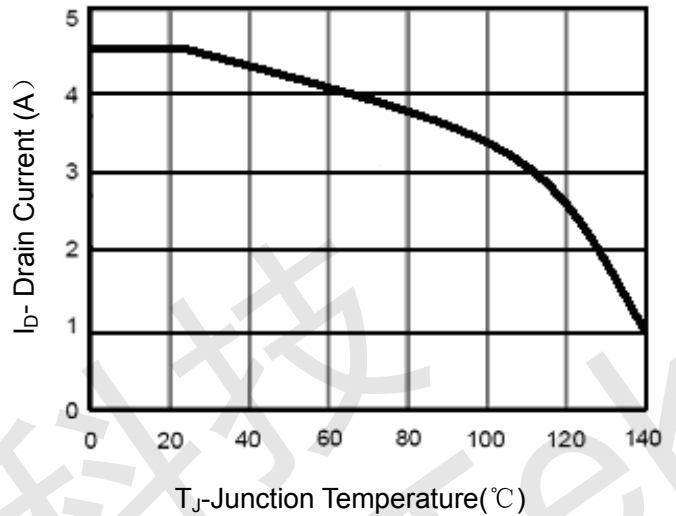
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.6	-0.8	-1.4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-6.5A$	-	25	35	m Ω
		$V_{GS}=-2.5V, I_D=-5A$	-	35	45	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=3A$	-	10	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V,$ $F=1.0MHz$	-	2100	-	PF
Output Capacitance	C_{oss}		-	450	-	PF
Reverse Transfer Capacitance	C_{rss}		-	300	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-10V, I_D=-1A,$ $V_{GS}=-4.5V, R_{GEN}=6\Omega$	-	25	-	nS
Turn-on Rise Time	t_r		-	30	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	70	-	nS
Turn-Off Fall Time	t_f		-	50	-	nS
Total Gate Charge	Q_g	$V_{DS}=-10V, I_D=-6.5A, V_{GS}=-4.5V$	-	17	-	nC
Gate-Source Charge	Q_{gs}		-	4.1	-	nC
Gate-Drain Charge	Q_{gd}		-	4.3	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=-7A$	-	-	-1.2	V



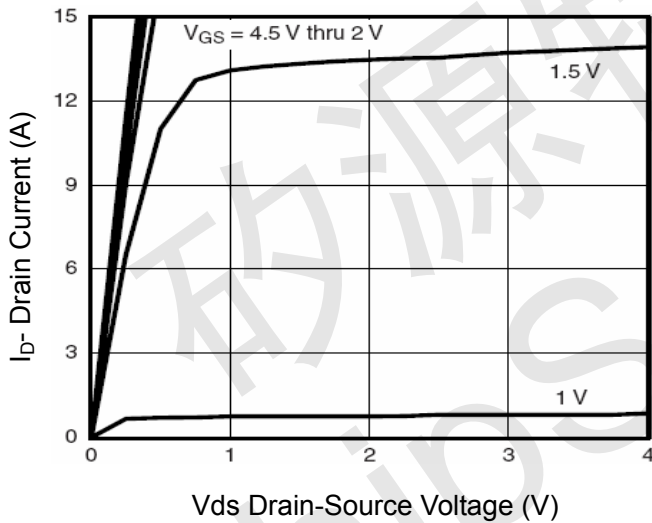
N-CHANNEL Typical Electrical and Thermal Characteristics



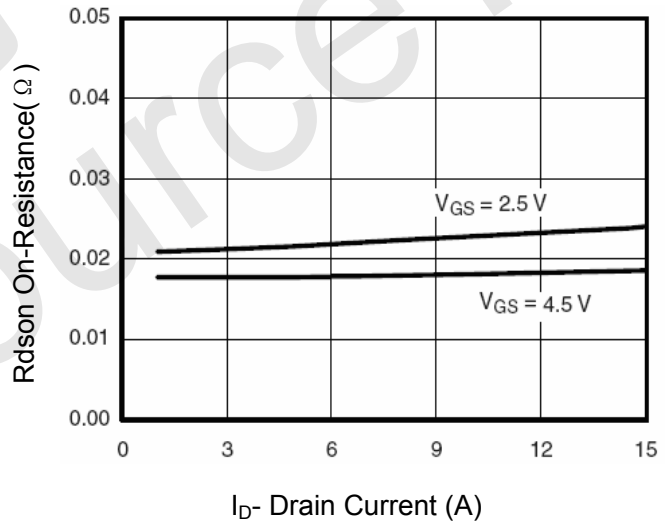
T_J-Junction Temperature(°C)
Figure 1 Power Dissipation



T_J-Junction Temperature(°C)
Figure 2 Drain Current



V_{DS} Drain-Source Voltage (V)
Figure 3 Output Characteristics



I_D- Drain Current (A)
Figure 4 Drain-Source On-Resistance

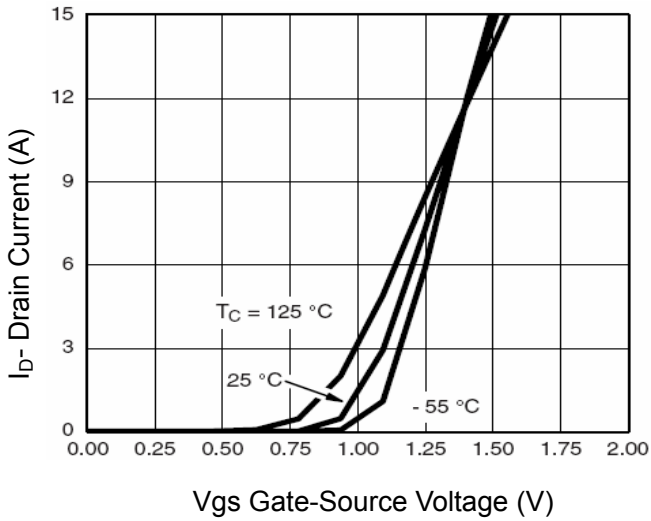


Figure 5 Transfer Characteristics

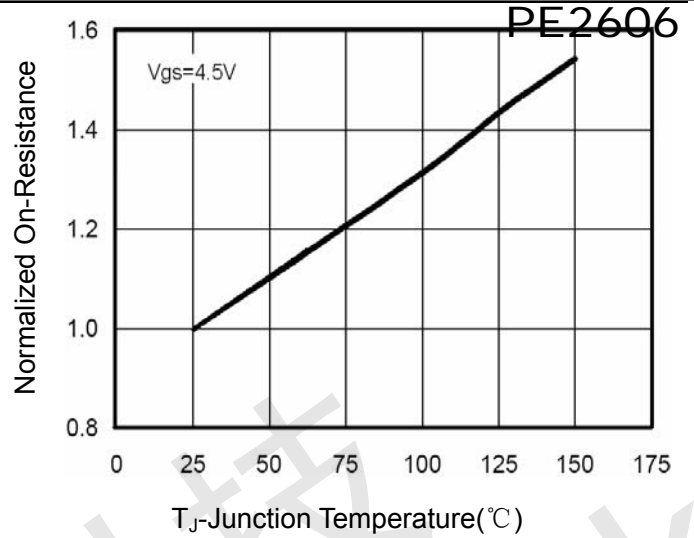


Figure 6 Drain-Source On-Resistance

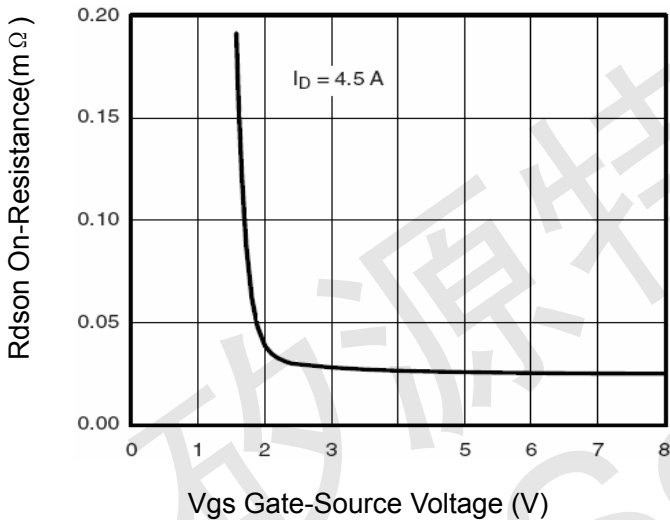


Figure 7 R_{dson} vs. V_{gs}

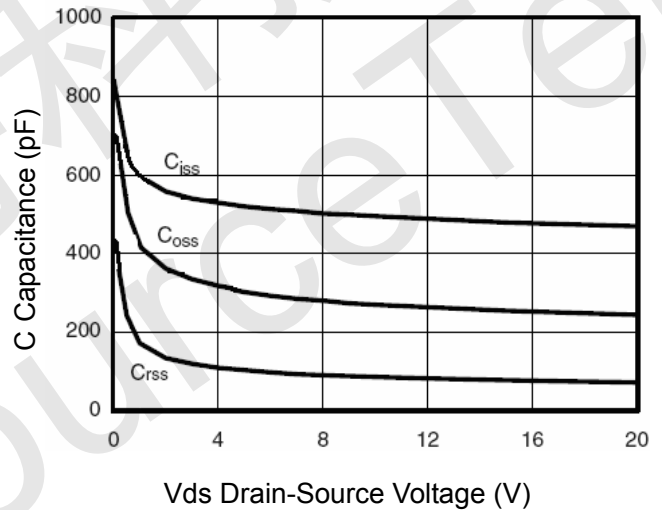


Figure 8 Capacitance vs V_{ds}

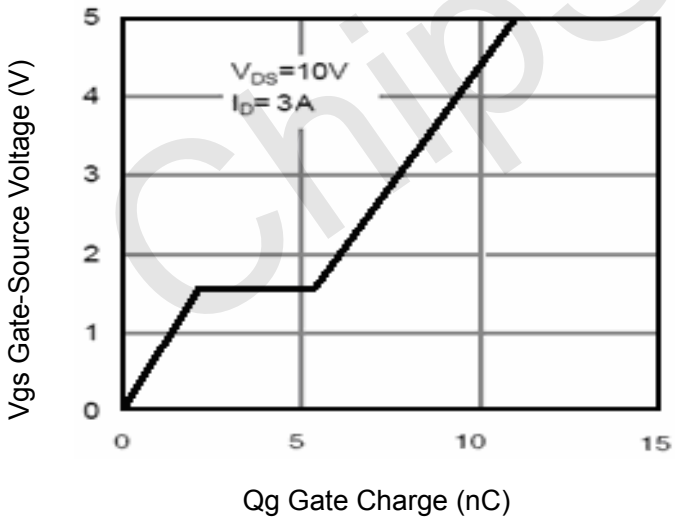


Figure 9 Gate Charge

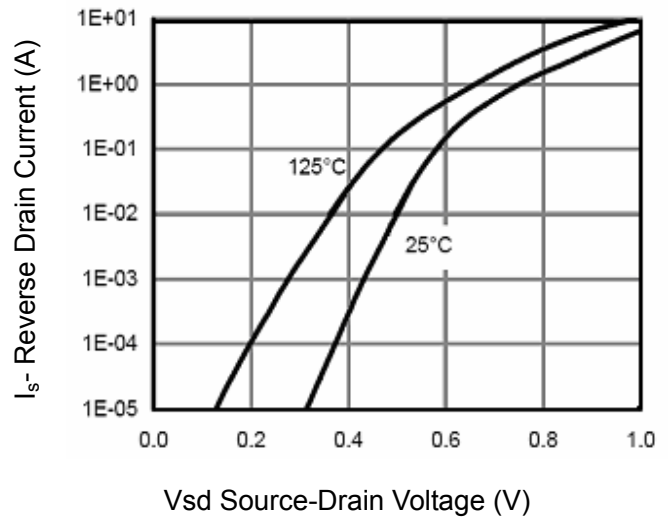


Figure 10 Source- Drain Diode Forward



P-CHANNEL Typical Electrical and Thermal Characteristics

PE2606

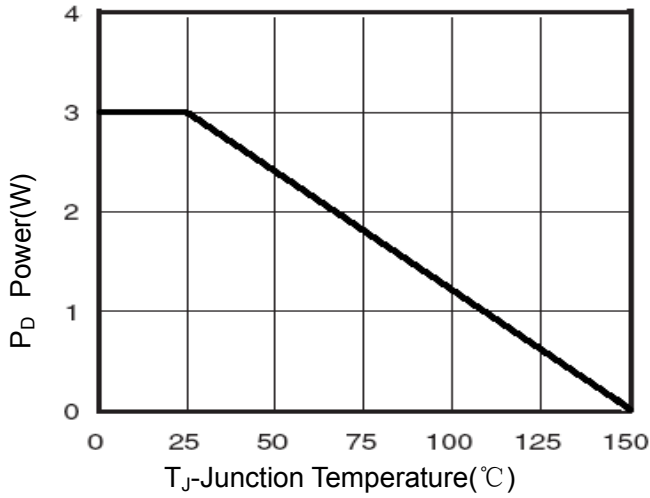


Figure 1 Power Dissipation

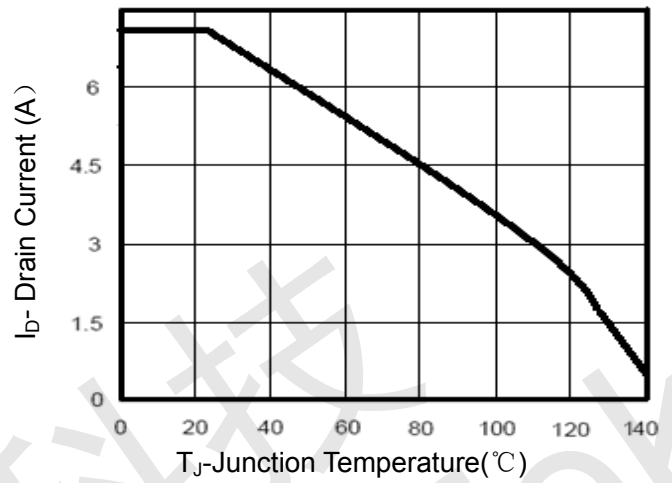


Figure 2 Drain Current

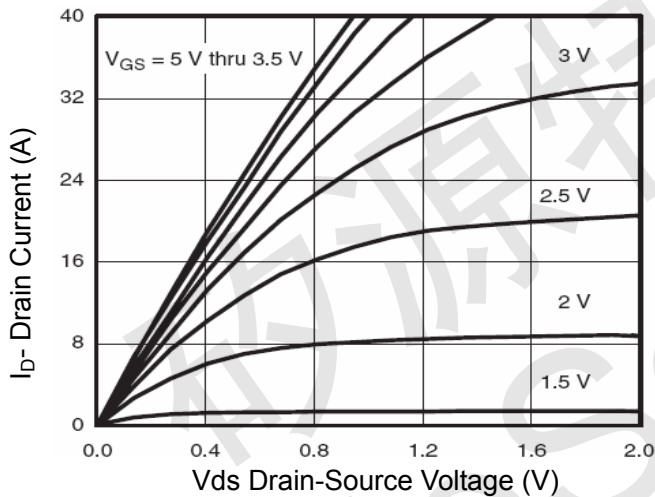


Figure 3 Output Characteristics

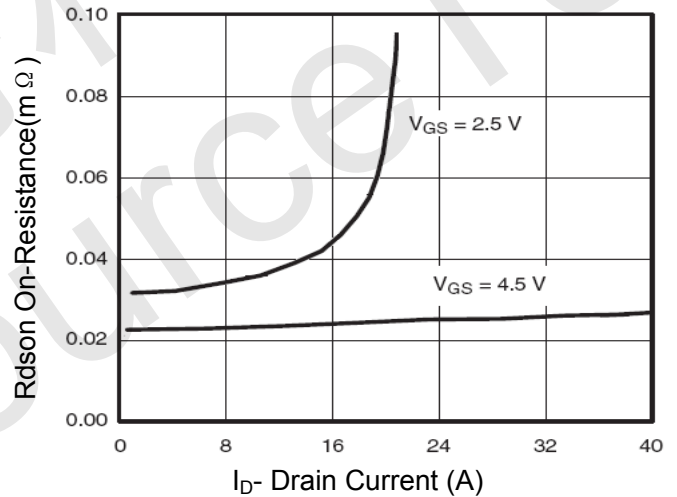


Figure 4 Drain-Source On-Resistance

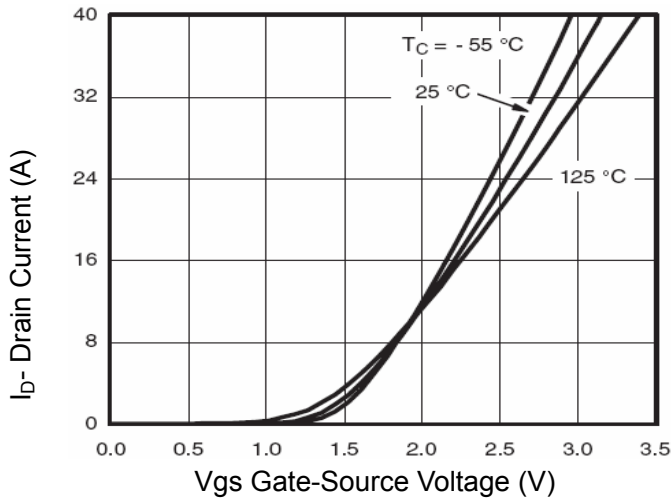


Figure 5 Transfer Characteristics

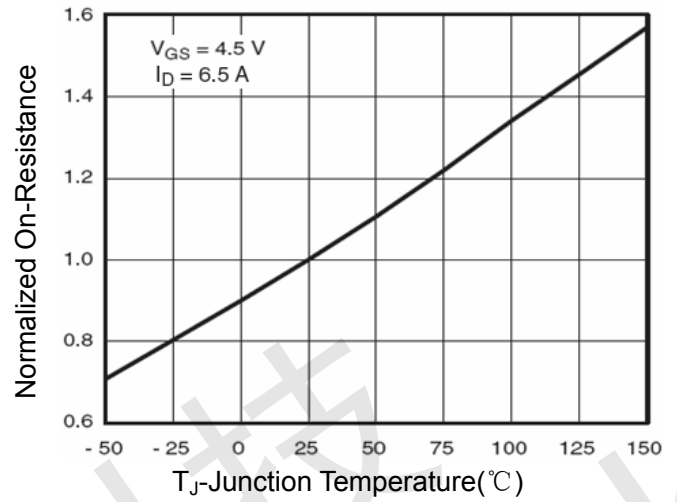


Figure 6 Drain-Source On-Resistance

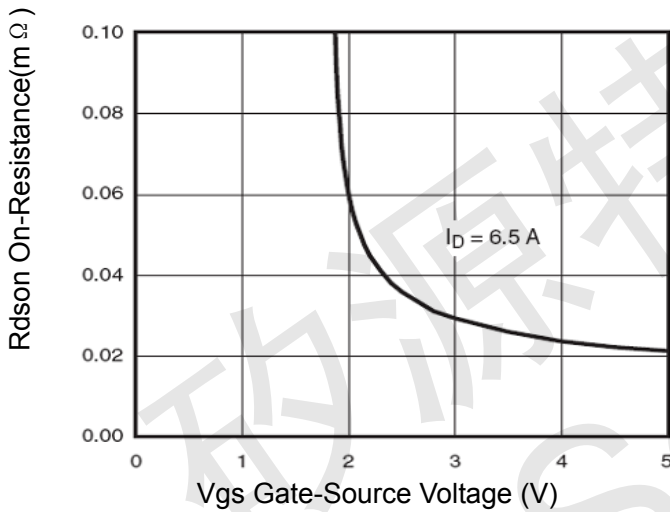


Figure 7 $R_{DS(on)}$ vs V_{GS}

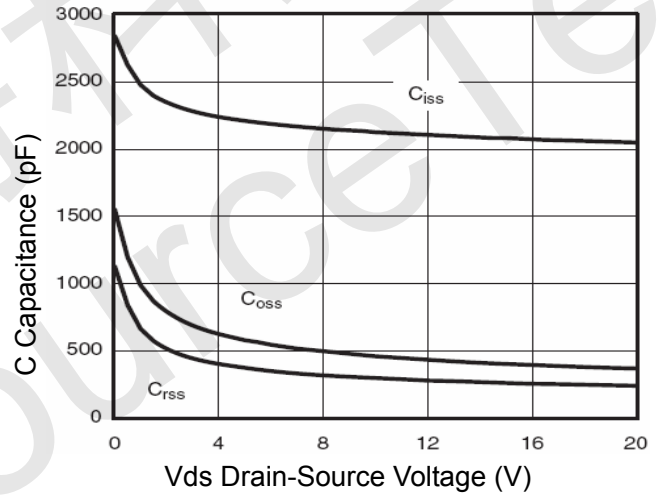


Figure 8 Capacitance vs V_{DS}

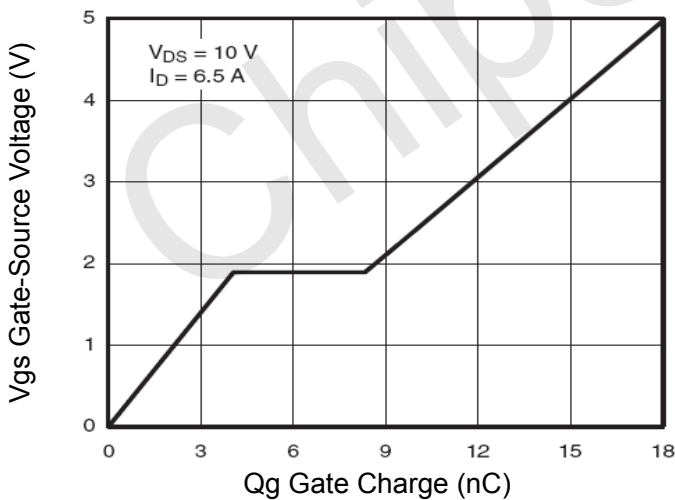


Figure 9 Gate Charge

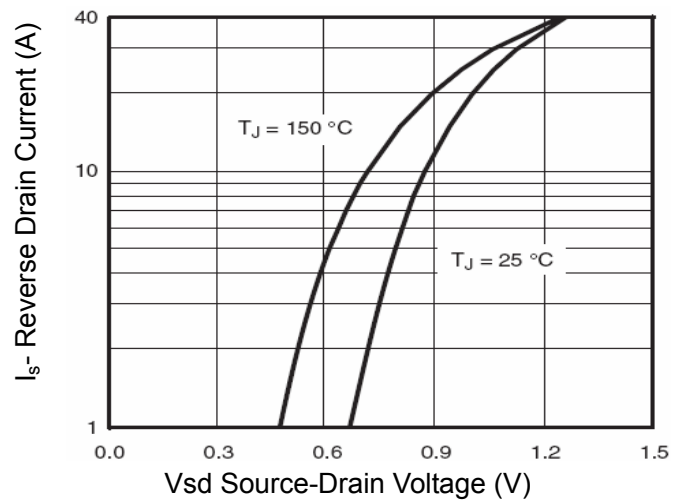
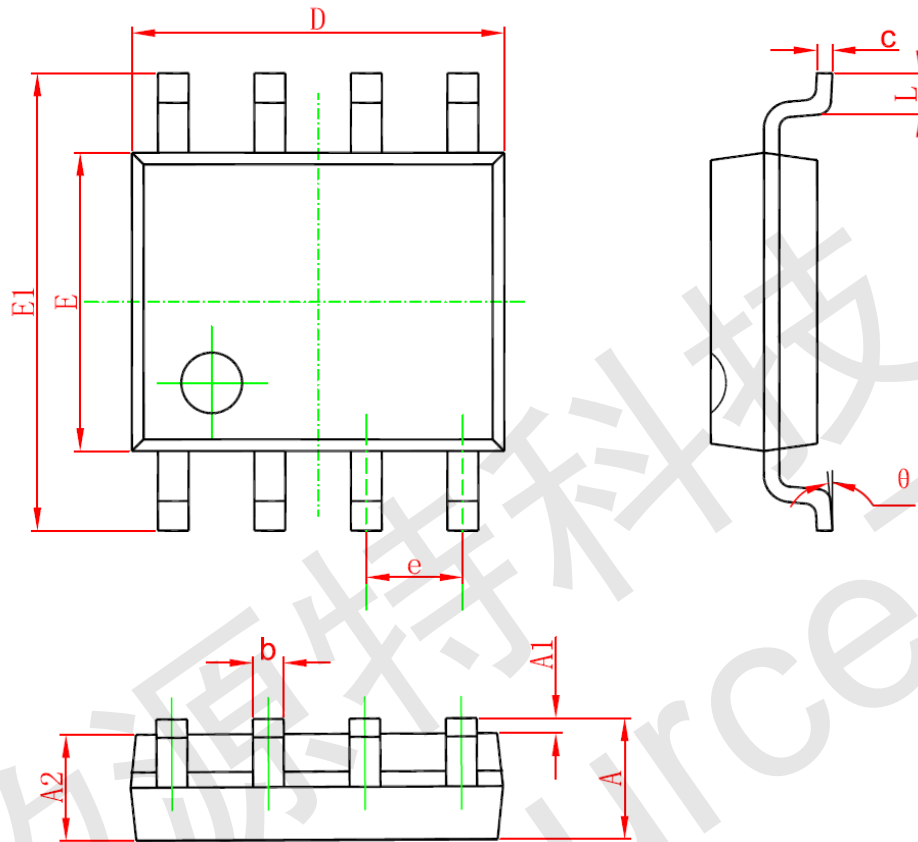


Figure 10 Source-Drain Diode Forward



SOP-8 PACKAGE IN FORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°