描述 / Descriptions

SOP-8 塑封封装互补增强模式 MOS 场效应管。
Complementary Enhancement MOSFET in a SOP-8 Plastic Package.

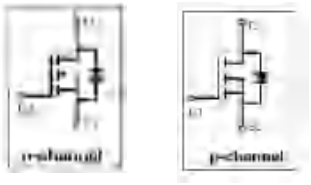
特征 / Features

N-channel	P-channel
V_{DS}(V)=20V	V_{DS}(V)=-20V
I_D=5.2A	I_D=-3A
$R_{DS(ON)}$<28mΩ (V_{GS}=4.5V)	$R_{DS(ON)}$<110mΩ (V_{GS}=-4.5V)
$R_{DS(ON)}$<37mΩ (V_{GS}=2.5V)	$R_{DS(ON)}$<140mΩ (V_{GS}=-2.5V)

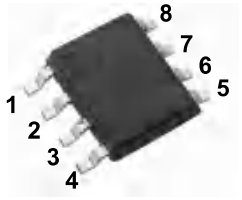
用途 / Applications

用于高功率 DC/DC 转换和功率开关。适用于作负载开关或脉宽调制应用。
These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies. This device is suitable for use as a load switch or in PWM applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1：S2 PIN 2：G2 PIN 3：S1 PIN4：G1
PIN 5：D1 PIN 6：D1 PIN 7：D2 PIN 8：D2

极限参数 / Absolute Maximum Ratings(Ta=25℃)

参数 Parameter	符号 Symbol	数值 Rating		单位 Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DSS}	±20		V
Gate-Source Voltage	V_{GSS}	±10		V
Continuous Drain Current [A]	I_D (T_A=25℃)	5.2	-3.0	A
	I_D (T_A=70℃)	4.0	-2.2	A
Pulsed Drain Current [B]	I_{DM}	±16		A
Power Dissipation	P_D (T_A=25℃)	2		W
	P_D (T_A=70℃)	1.44		W
Maximum Junction-to-Ambient [A]	$R_{\theta JA}$(t≤10s)	62.5		℃/W
	$R_{\theta JA}$	110		℃/W
Maximum Junction-to-Lead [C]	$R_{\theta JL}$	60		℃/W
Junction and Storage Temperature Range	T_J,T_{STG}	-55 to +150		℃

Notes:

A:The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any a given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C.The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

D.The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

E.These tests are performed with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

N-沟道电性能参数/N-CHANNEL Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	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}=±10V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.5	0.7	1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=6A	-	22	28	mΩ
		V_{GS}=2.5V, I_D=5A	-	27	37	
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=6A	20	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=10V,V_{GS}=0V, F=1.0MHz	-	640	-	PF
Output Capacitance	C_{oss}		-	140	-	PF
Reverse Transfer Capacitance	C_{rss}		-	80	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V,I_D=1A V_{GEN}=4.5V,R_G=6Ω	-	8	-	nS
Turn-on Rise Time	t_r		-	9	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	15	-	nS
Turn-Off Fall Time	t_f		-	4	-	nS
Total Gate Charge	Q_g	V_{DS}=10V,I_D=3A, V_{GS}=4.5V	-	10	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	nC
Gate-Drain Charge	Q_{gd}		-	1.6	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=1.7A	-	-	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	6	A

N-沟道电参数曲线图 / N-CHANNEL Electrical Characteristic Curve

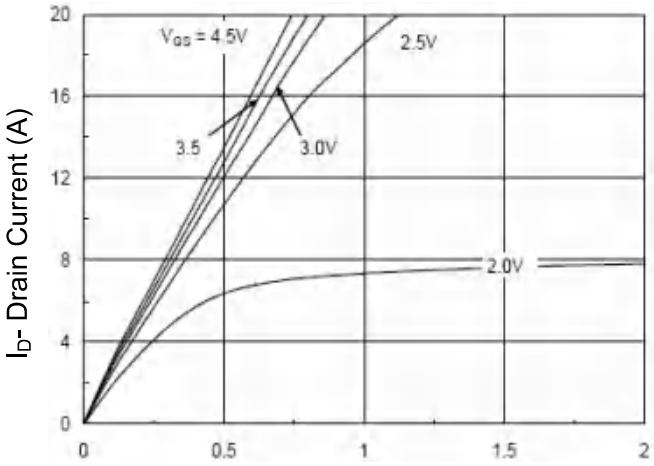


Figure 1 Output Characteristics

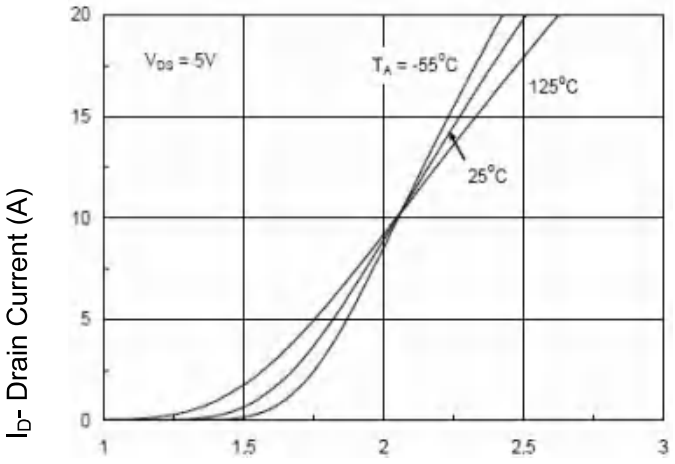


Figure 2 Transfer Characteristics

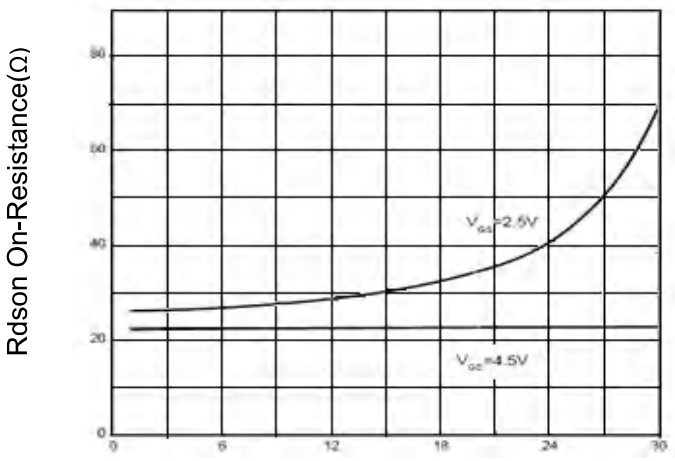


Figure 3 Rdson- Drain Current

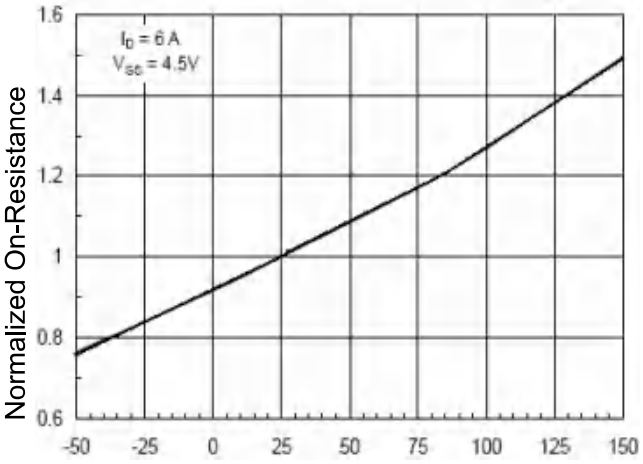


Figure 4 Rdson-JunctionTemperature

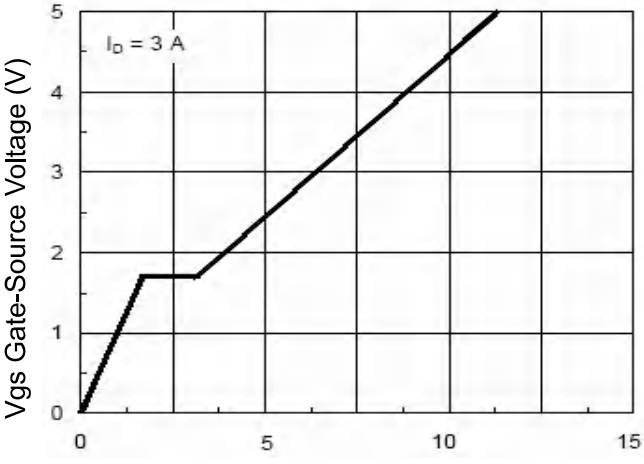


Figure 5 Gate Charge

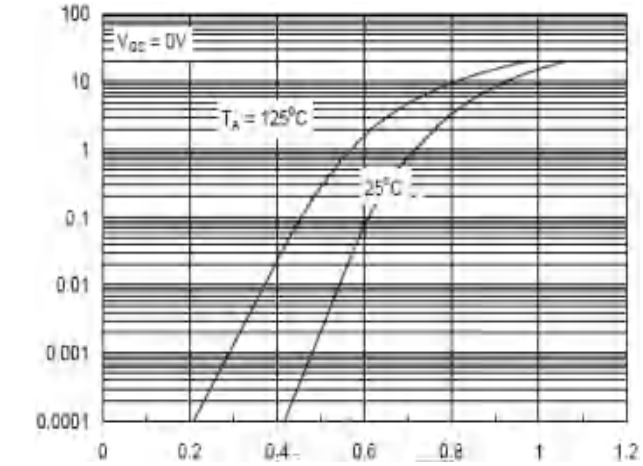


Figure 6 Source- Drain Diode Forward

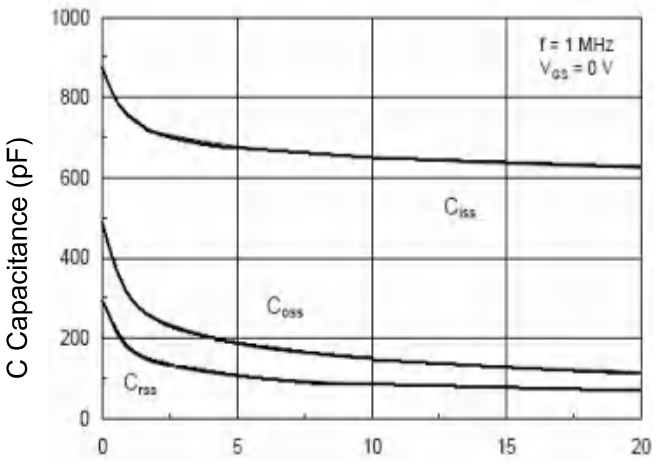
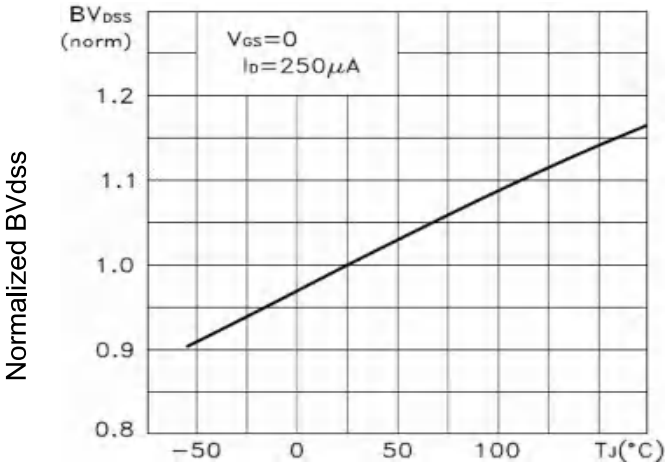


Figure 7 Capacitance vs Vds



T_J-Junction Temperature(℃)

Figure 9 BV_{DSS} vs Junction Temperature

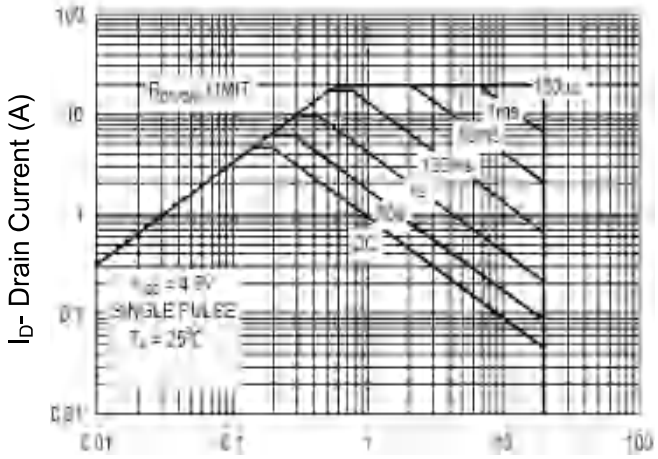


Figure 8 Safe Operation Area

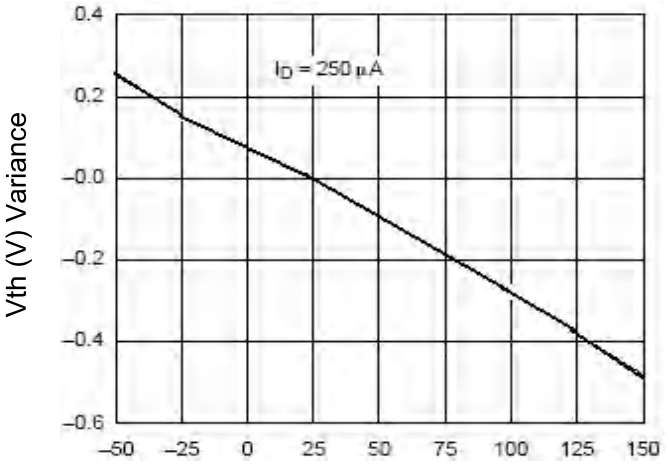


Figure 10 $V_{GS(th)}$ vs Junction Temperature

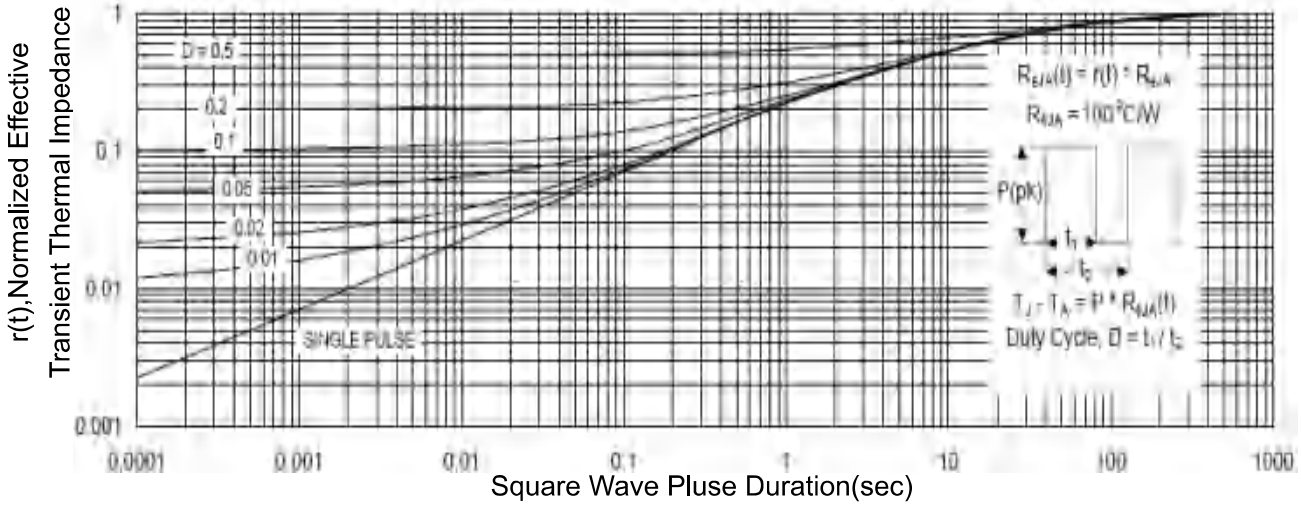


Figure 11 Normalized Maximum Transient Thermal Impedance

P-沟道电性能参数/P-CHANNEL Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.4	-0.7	-1	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-3A	-	66	110	mΩ
		V_{GS}=-2.5V, I_D=-2A	-	95	140	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-2A	5	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-10V,V_{GS}=0V, F=1.0MHz	-	405	-	PF
Output Capacitance	C_{oss}		-	75	-	PF
Reverse Transfer Capacitance	C_{rss}		-	55	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-10V,I_D=-1A V_{GS}=-4.5V,R_{GEN}=10Ω	-	11	-	nS
Turn-on Rise Time	t_r		-	35	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	30	-	nS
Turn-Off Fall Time	t_f		-	10	-	nS
Total Gate Charge	Q_g	V_{DS}=-10V,I_D=-3A, V_{GS}=-2.5V	-	3.3	12	nC
Gate-Source Charge	Q_{gs}		-	0.7	-	nC
Gate-Drain Charge	Q_{gd}		-	1.3	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=1.3A	-	-	-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	-3	A

P-沟道电参数曲线图 / P-CHANNEL Electrical Characteristic Curve

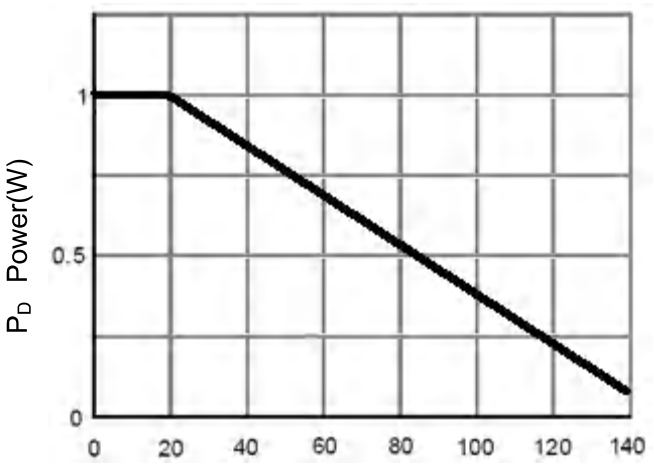


Figure 1 Power Dissipation

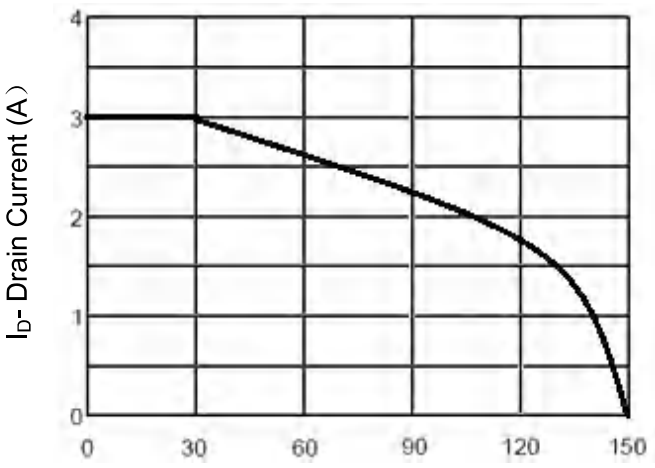


Figure 2 Drain Current

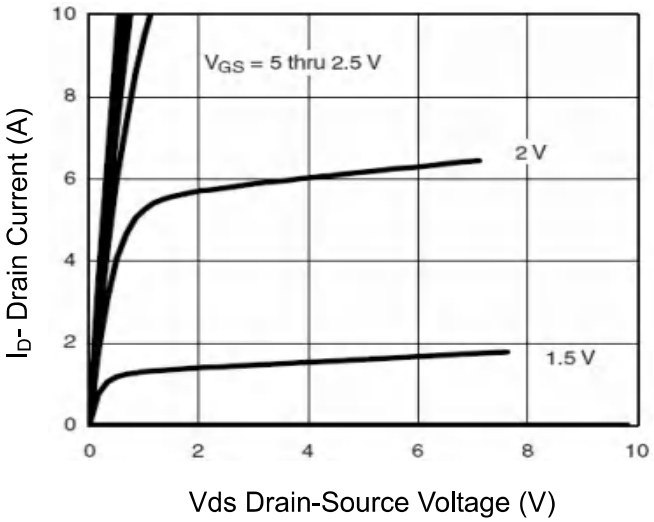


Figure 3 Output Characteristics

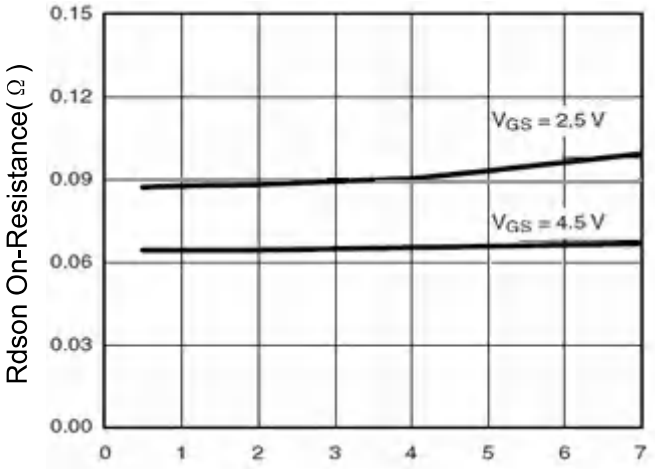


Figure 4 Drain-Source On-Resistance

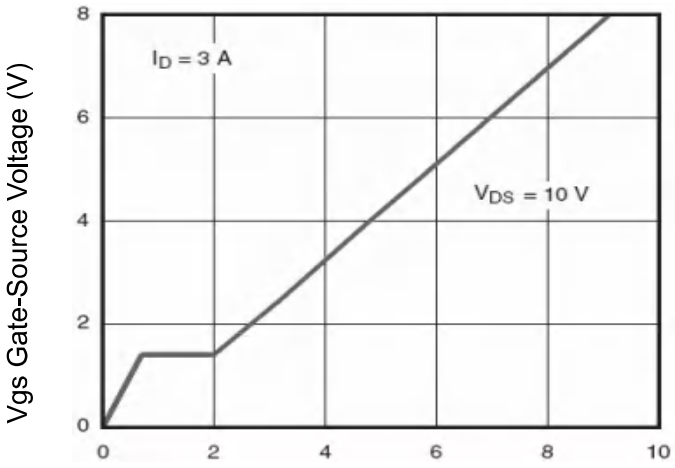


Figure 5 Gate Charge

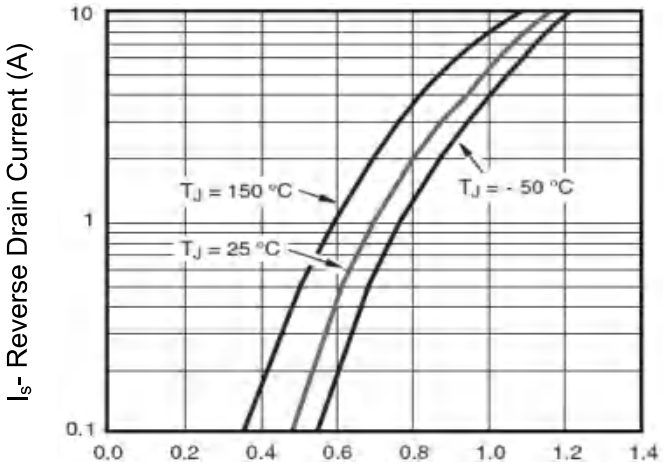


Figure 6 Source- Drain Diode Forward

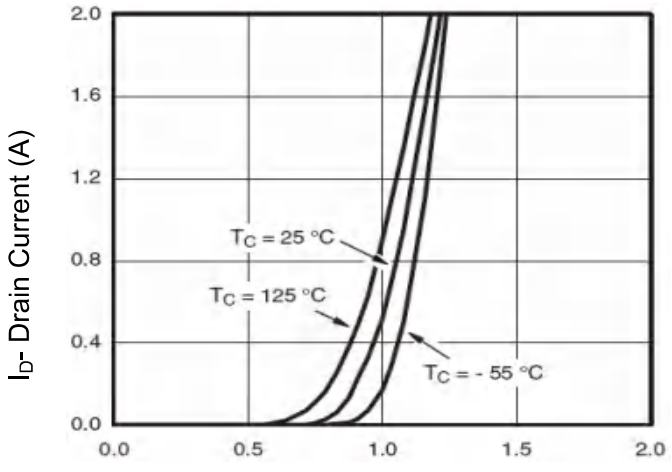


Figure 7 Transfer Characteristics

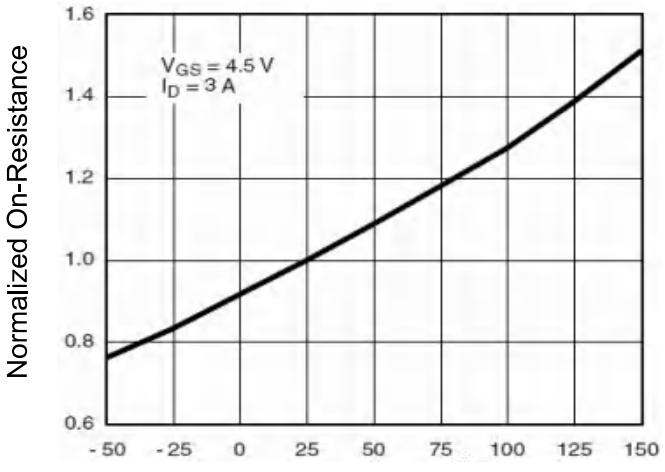


Figure 8 Drain-Source On-Resistance

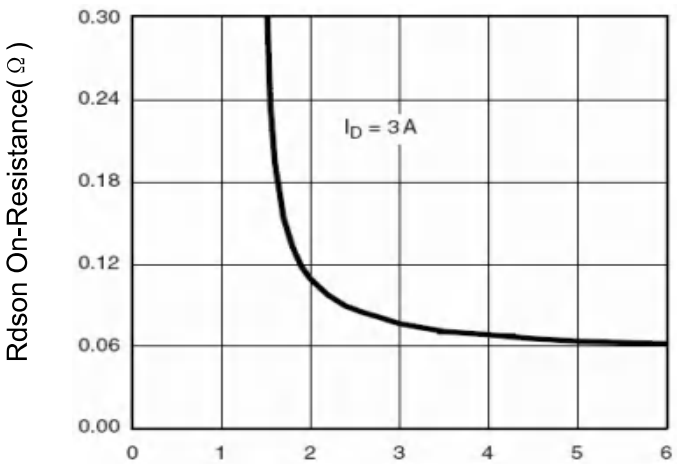


Figure 9 Rdson vs Vgs

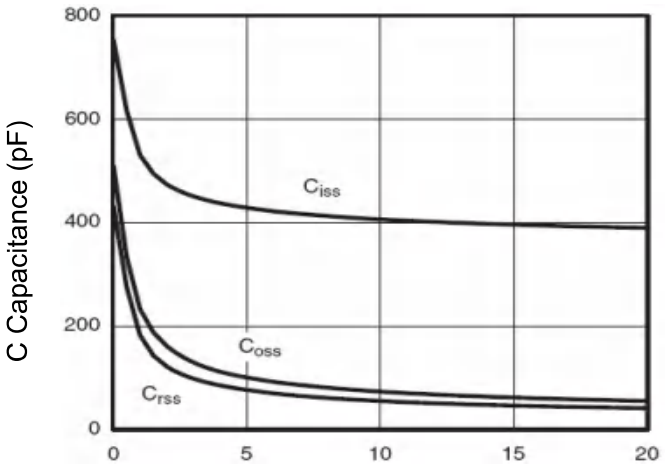


Figure 10 Capacitance vs Vds

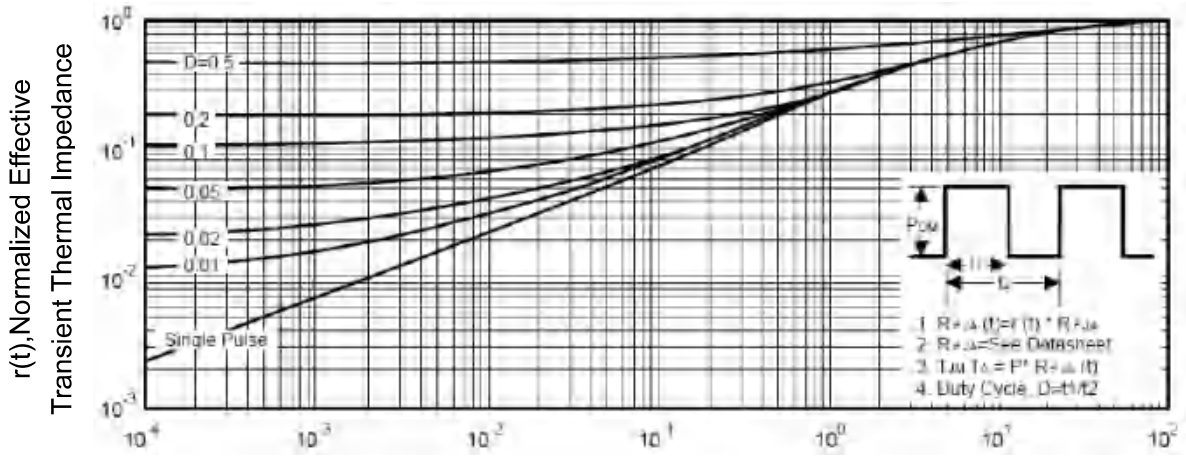
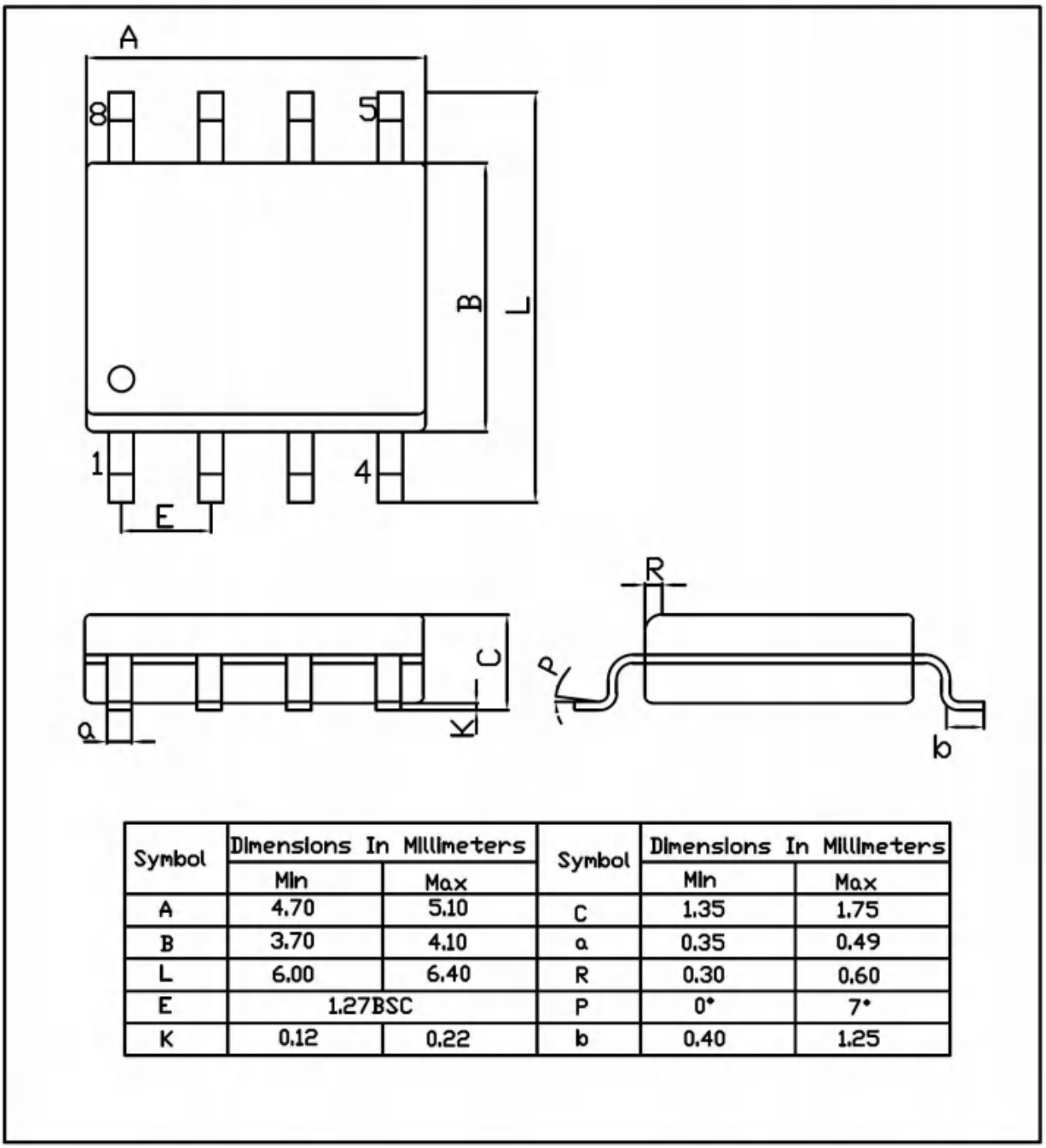


Figure 11 Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

SOP-8 Unit:mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	α	0.35	0.49
L	6.00	6.40	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25