深圳市富满电子集团股份有限公司
SHEN ZHEN FINE MAD ELECTRONICS GROUP CO., LTD.

TC4606(文件编号:S&CIC1267) 双重增强型 MOSFET(N-P 沟道)

N 沟道
20V/7A
RDS(ON)=12mΩ（typ.）@VGS=4.5V
RDS(ON)=17mΩ（typ.）@VGS=2.5V

P 沟道
-20V/-5.5A
RDS(ON)=33mΩ （typ.）@VGS= -4.5V
RDS(ON)=45mΩ （typ.）@VGS= -2.5V

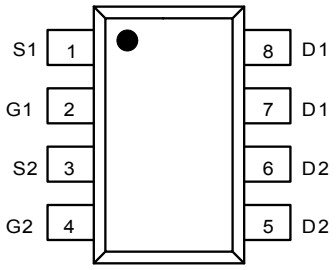
特点

- 超高密度电池设计
- 可靠耐用
- 封装形式：SOP-8
- 工作温度范围：-55~150℃

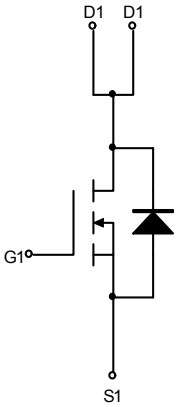
产品应用

- 用在笔记本电脑的电源管理系统
- 用在便携式设备和电池的供电系统

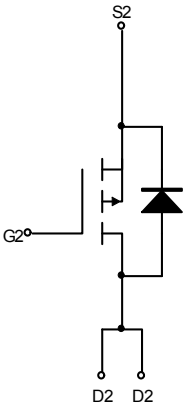
引脚示意



SOP-8



N Channel



P Channel

绝对最大额定值 (TA=25℃ 除非另有说明)

符号	参数	N 沟道	P 沟道	单位
V_{DSS}	漏源电压	20	-20	V
I_D	漏极连续电流	7	-5.5	A
I_{DM}	漏极脉冲电流	28	-22	
T_J	工作结最高温度	150		℃
T_{STG}	储存温度范围	-55—150		
P_D	功耗	T_A=25℃	2	W
		T_A=100℃	0.8	
$R_{\theta JA}$	Thermal Resistance -Junction to Ambient		62.5	℃/W

电气特性（TA=25℃，除非另有说明）

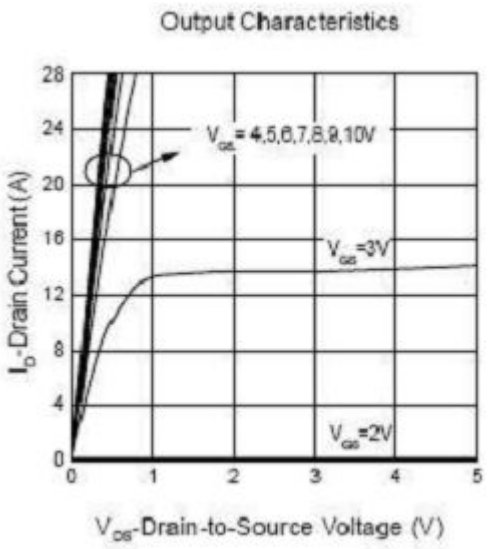
符号	参数	测试条件		最小值	典型值	最大值	单位
静态							
BV_{DSS}	漏极击穿电压	V_{GS}=0V,I_{DS}=250uF	N-CH	20			V
		V_{GS}=0V,I_{DS}=-250uF	P-CH	-20			
I_{DSS}	零栅极电压漏极电流	V_{DS}=24V,V_{GS}=0V	N-CH			1	uA
		V_{DS}=-24V,V_{GS}=0V	P-CH			-1	
$V_{GS(TH)}$	栅极阈值电压	V_{DS}=V_{GS},I_{DS}=250uA	N-CH	0.5	0.7	1.1	V
		V_{DS}=V_{GS},I_{DS}=-250uA	P-CH	-0.4	-0.7	-1.0	
I_{GSS}	栅极漏电流	V_{GS}=±12V,V_{DS}=0V	N-CH			±100	nA
			P-CH			±100	
$R_{DS(ON)}$	漏源导通电阻	V_{GS}=4.5V,I_{DS}=1A	N-CH		12	17	mΩ
		V_{GS}=-4.5V,I_{DS}=-1A	P-CH		33	45	
		V_{GS}=2.5V,I_{DS}=0.5A	N-CH		17	24	
		V_{GS}=-2.5V,I_{DS}=-0.5A	P-CH		45	60	

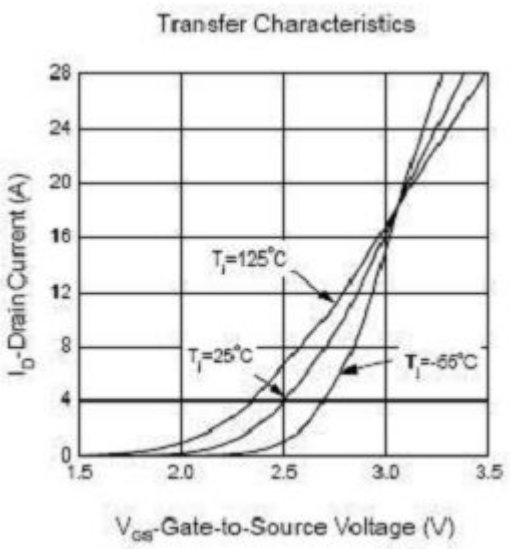
二极管							
V_{SD}	二极管正向电压	I_{SD}=2A,V_{GS}=0V	N-CH		0.7	1.3	V
		I_{SD}=-2.3A,V_{GS}=0V	P-CH		-1.7	-1.3	
动态							
R_G	栅极电阻	V_{GS}=0V,V_{DS}=0V,F=1MHZ	N-CH		2		Ω
			P-CH		11		
C_{ISS}	输入电容	N-Channel V_{GS}=0V V_{DS}=25V F=1MHZ P-Channel V_{GS}=0V V_{DS}=-25V F=1MHZ	N-CH		835		pF
			P-CH		950		
C_{OSS}	输出电容		N-CH		145		
			P-CH		160		
C_{rSS}	反向传输电容		N-CH		15		
			P-CH		110		
$t_{d(on)}$	打开延时时间	N-Channel V_{DD}=15V,R_L=15Ω	N-CH		11	20	ns
			P-CH		12	24	

T_r	打开上升时间	I_{DS}=1A,V_{GEN}=10V R_G=6Ω	N-CH		17	28	
			P-CH		15	29	
$T_{d(off)}$	关掉延时时间	P-Channel V_{DD}=-15V,R_L=-15Ω I_{DS}=-1A,V_{GEN}=-10V R_G=6Ω	N-CH		36	62	
			P-CH		35	60	
T_f	关掉下降时间		N-CH		20	36	
			P-CH		15	30	
栅极电荷							
Q_g	栅极总电荷	N-Channel V_{DS}=15V,V_{GS}=10V, I_{DS}=7A	N-CH		19	25	nC
			P-CH		33	43	
Q_{gs}	栅极源极电荷		N-CH		1.6		
		P-Channel V_{DS}=-15V,V_{GS}=-10V, I_{DS}=-5.5A	P-CH		5		
Q_{gd}	栅极漏极电荷		N-CH		3.6		
			P-CH		4		

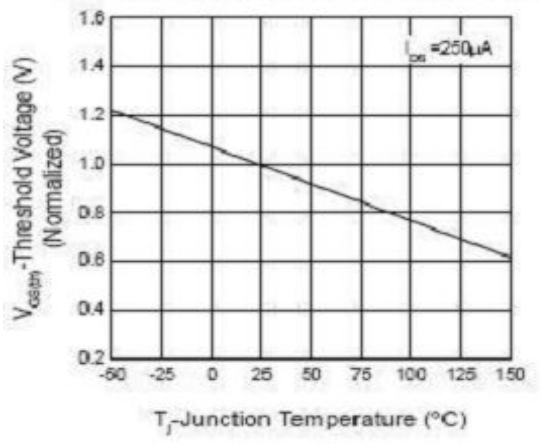
典型特征

N 沟道

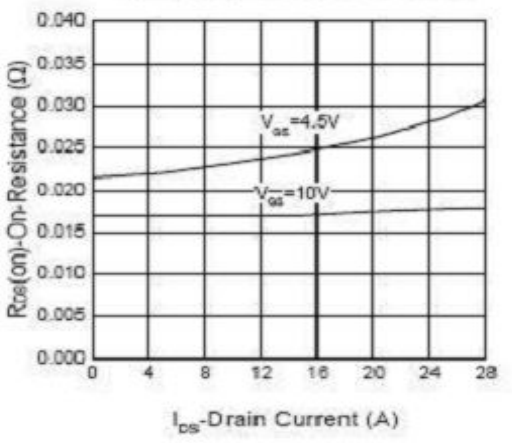




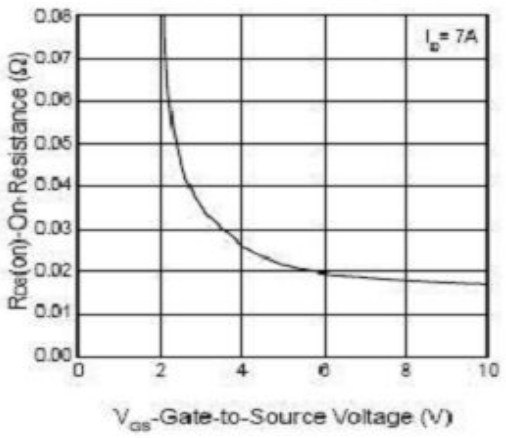
Threshold Voltage vs. Junction Temperature



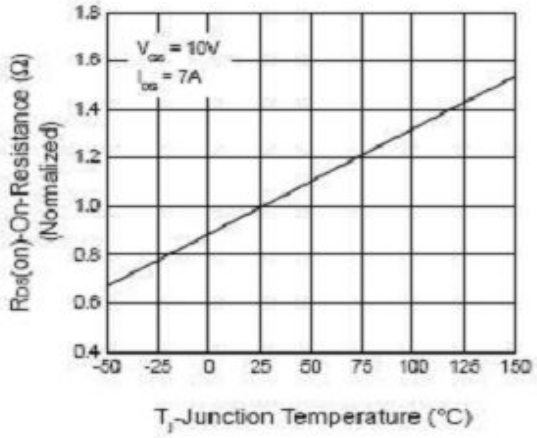
On-Resistance vs. Drain Current



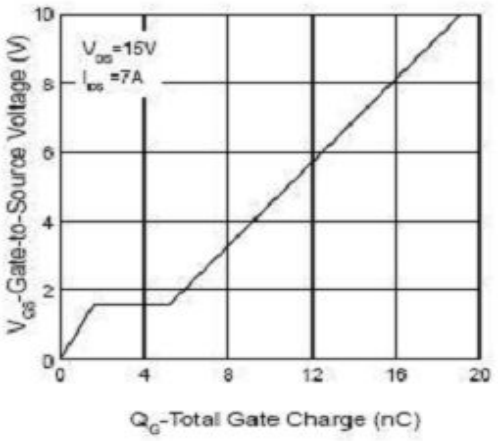
On-Resistance vs. Gate-to-Source Voltage



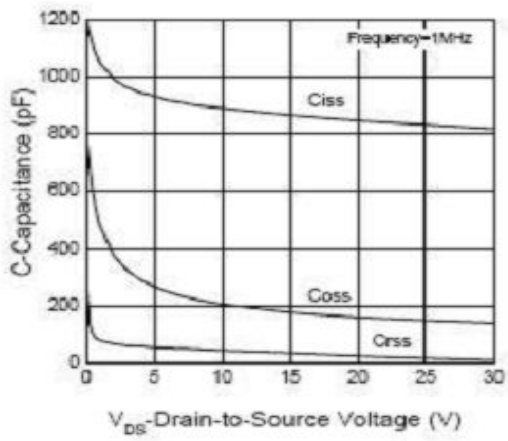
On-Resistaence vs. Junction Temperature



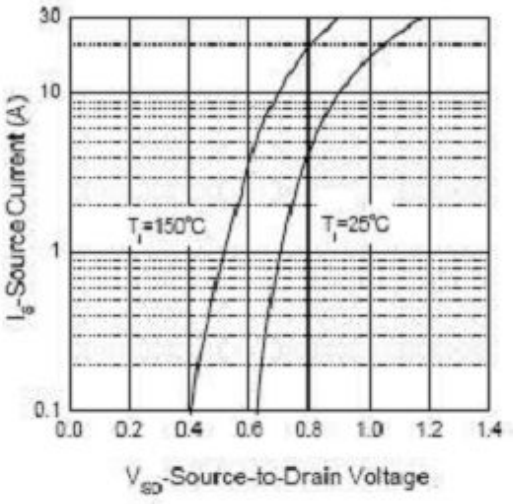
Gate Charge



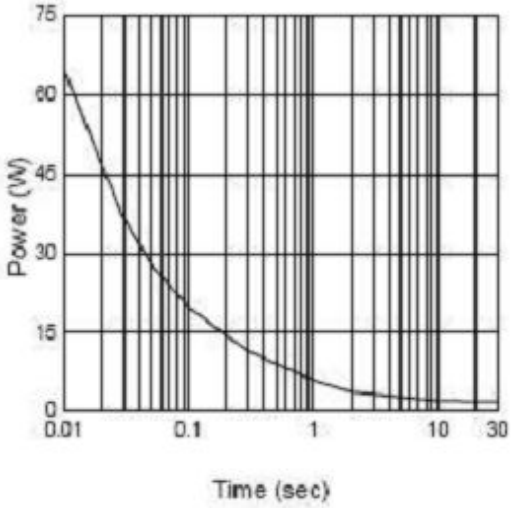
Capacitance Characteristics



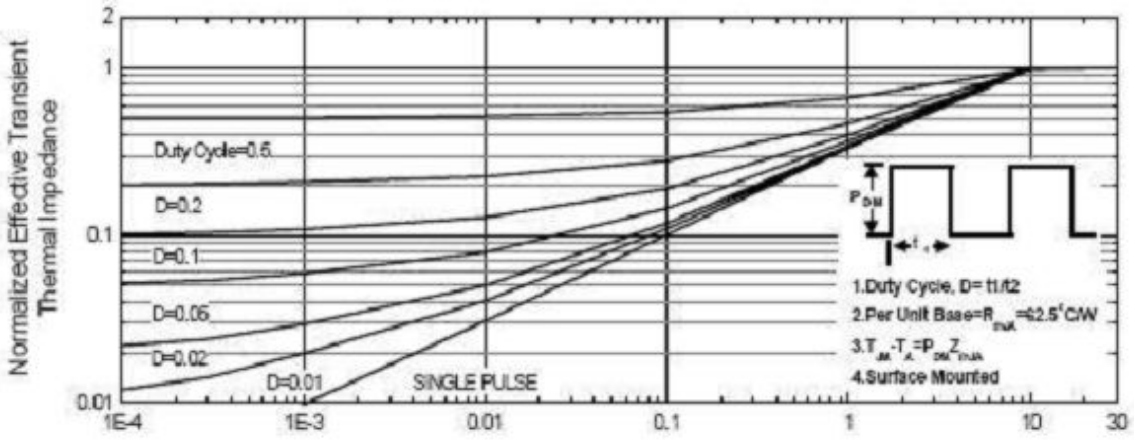
Source-Drain Diode Forward Voltage



Single Pulse Power

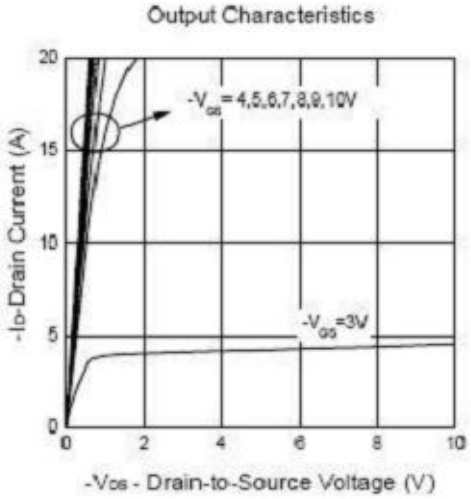


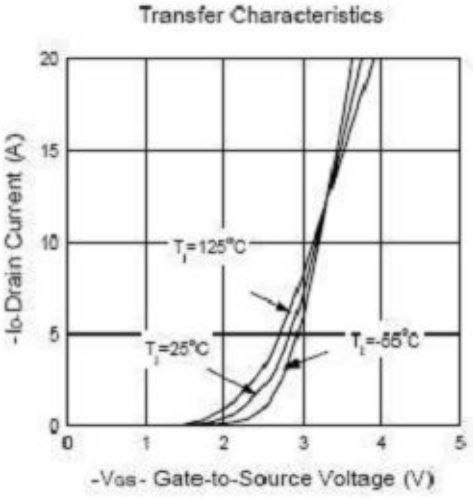
Normalized Transient Thermal Transient Impedence, Junction to Ambient

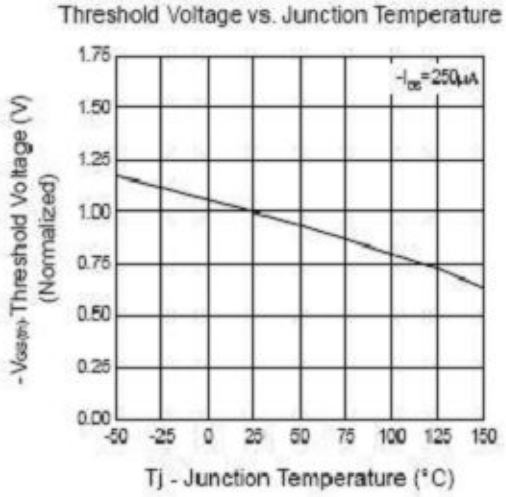


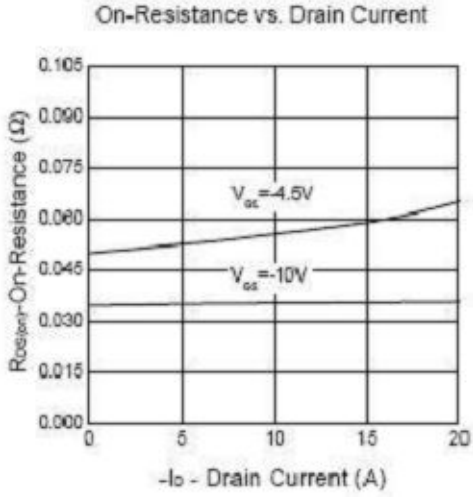
典型特性

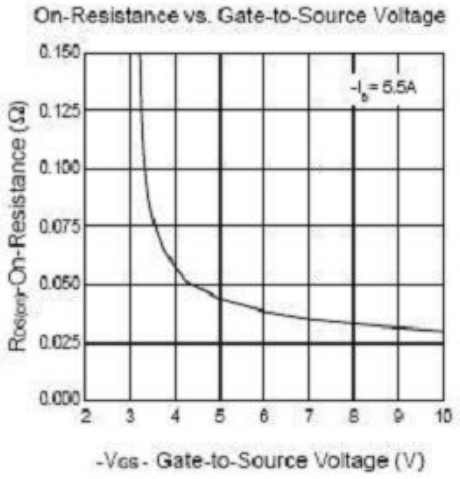
P 沟道

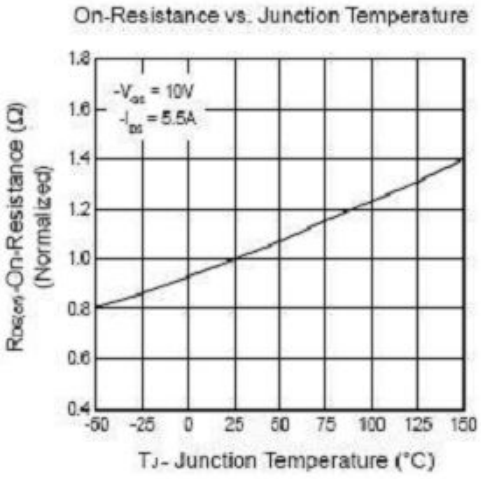

Output Characteristics
-Vgs=4,5,6,7,8,9,10V
-Vgs=3V
-Io-Drain Current (A)
-Vos - Drain-to-Source Voltage (V)

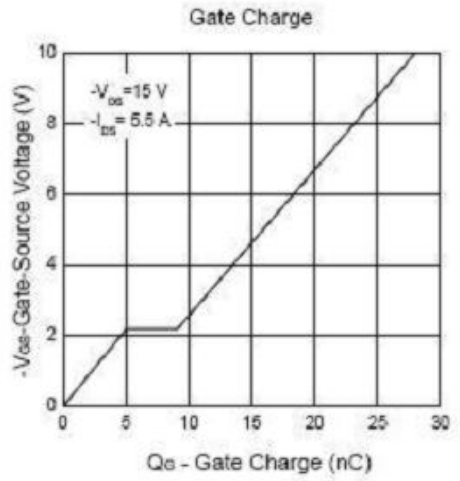

Transfer Characteristics
Tj=125°C
Tj=25°C
Tj=-55°C
-Io-Drain Current (A)
-Vos - Gate-to-Source Voltage (V)

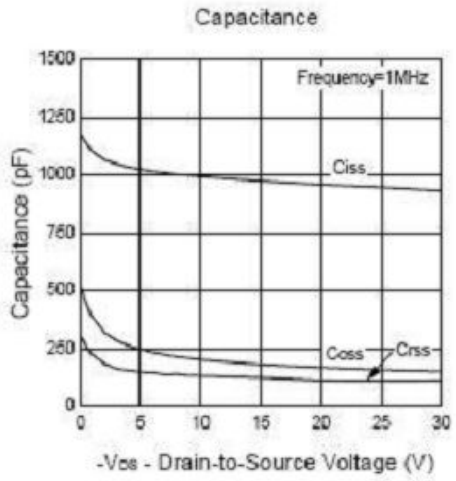

Threshold Voltage vs. Junction Temperature
-Ios=250μA
-Vgs(th) Threshold Voltage (V)
(Normalized)
Tj - Junction Temperature (°C)

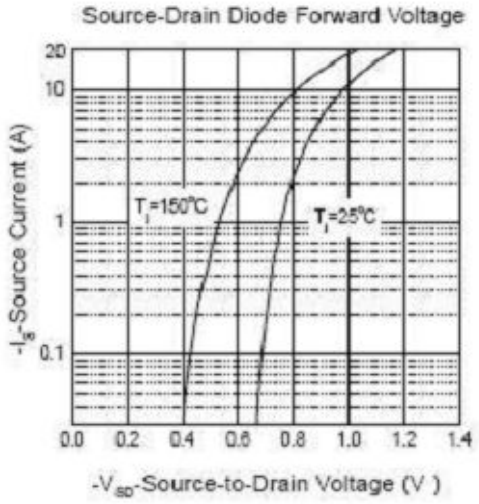

On-Resistance vs. Drain Current
Vgs=-4.5V
Vgs=-10V
Rds(on)-On-Resistance (Ω)
-Io - Drain Current (A)

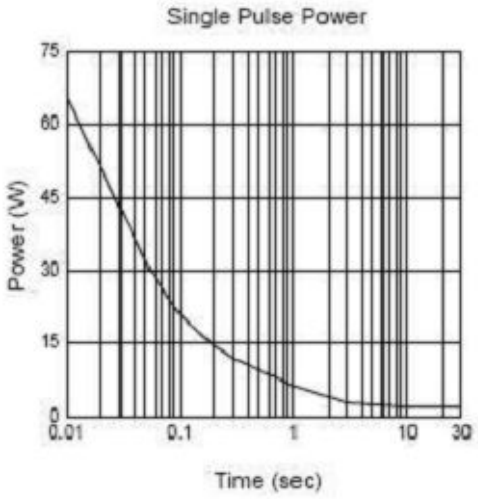

On-Resistance vs. Gate-to-Source Voltage
-Id = 5.5A
RDS(on)-On-Resistance (Ω)
0.150
0.125
0.100
0.075
0.050
0.025
0.000
2 3 4 5 6 7 8 9 10
-VGS - Gate-to-Source Voltage (V)

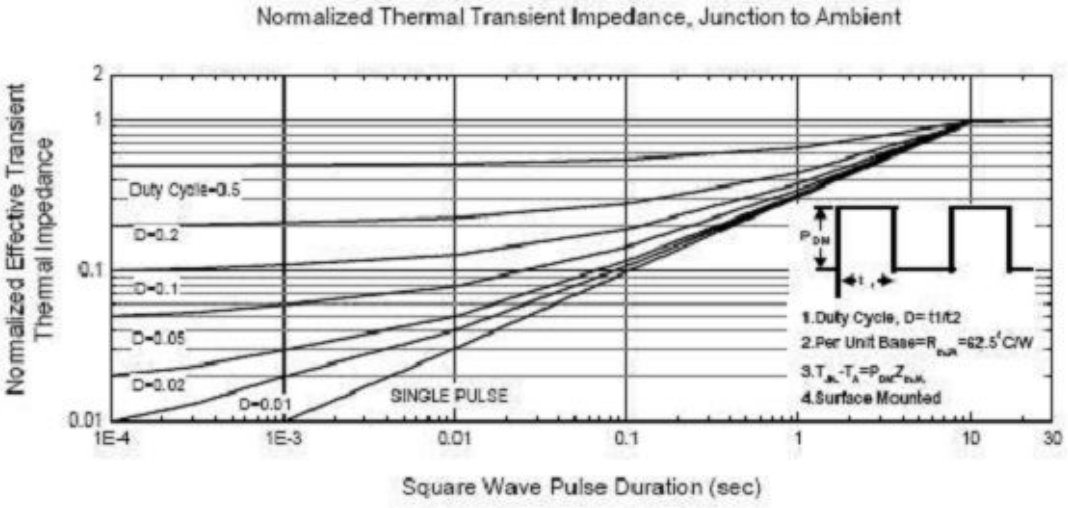

On-Resistance vs. Junction Temperature
-VGS = 10V
-ID = 5.5A
RDS(on)-On-Resistance (Ω)
(Normalized)
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
-50 -25 0 25 50 75 100 125 150
TJ - Junction Temperature (°C)


Gate Charge
-VDS=15 V
-ID= 5.5 A
-VGS-Gate-Source Voltage (V)
10
8
6
4
2
0
0 5 10 15 20 25 30
Qg - Gate Charge (nC)


Capacitance
Frequency=1MHz
Ciss
Coss
Crss
Capacitance (pF)
1500
1250
1000
750
500
250
0
0 5 10 15 20 25 30
-VDS - Drain-to-Source Voltage (V)

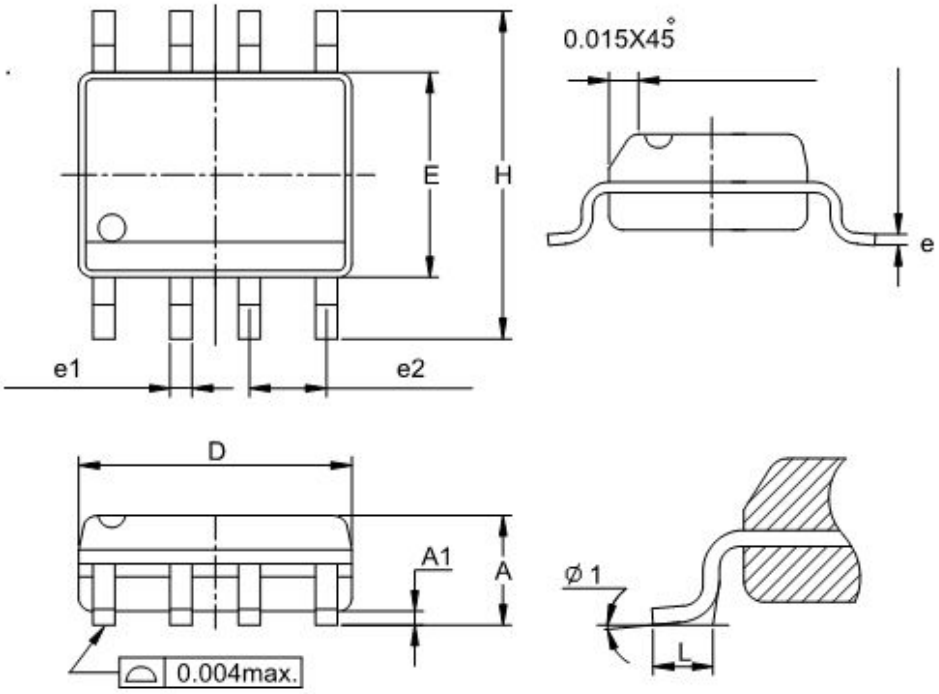

Source-Drain Diode Forward Voltage
-I_S-Source Current (A)
T_J=150°C
T_J=25°C
-V_SD-Source-to-Drain Voltage (V)


Single Pulse Power
Power (W)
Time (sec)


Normalized Thermal Transient Impedance, Junction to Ambient
Normalized Effective Transient Thermal Impedance
Duty Cycle=0.5
D=0.2
D=0.1
D=0.05
D=0.02
D=0.01
SINGLE PULSE
1.Duty Cycle, D=t1/t2
2.Per Unit Base=R_θJA=62.5°C/W
3.T_JM-T_A=P_DM Z_θJA
4.Surface Mounted
Square Wave Pulse Duration (sec)

封装信息

SOP-8 pin (Reference JEDEC Registration MS-012)



DIM	毫米		英寸	
	最小值	最大值	最小值	最大值
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
E1	0.33	0.51	0.013	0.020
E2	1.27BSC		0.5BSC	
ϕ1	8 °		8 °	