

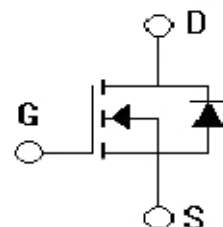


6R2D4

主要参数

Main Characteristics

I_D	140 A
V_{DS}	60 V
$R_{DS(on)-typ}$	2.4 m Ω
Q_g-typ	48 nC



用途

不间断电源
逆变器

Applications

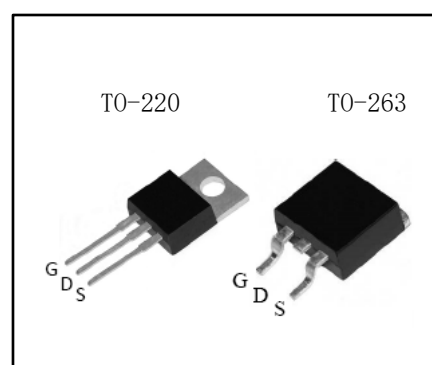
UPS
DC-AC Converter

产品特性

低栅极电荷
快速开关
提升了dv/dt能力
100%雪崩测试

Features

Low gate charge
Fast Switching
Improved dv/dt capabilities
100% avalanche test



绝对最大额定值 **Absolute Ratings** (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单位 Unit
最高漏极-源极直流电压 Drain-Source Voltage	V _{DSS}	60	V
连续漏极电流 (注1) Drain Current -continuous	I _D	140	A
最大脉冲漏极电流 (注2) Drain Current – pulse	I _{DM}	560	A
最高栅源电压 Gate-Source Voltage	V _{GSS}	±20	V
单脉冲雪崩能量, L=0.1mH, V _{DS} =48V, R _g =25 Ω Single Pulsed Avalanche Energy	E _{AS}	180	mJ
单脉冲雪崩电流 Single Pulsed Avalanche Current	I _{AS}	60	A
最高结温 Operating Junction Temperature	T _J	+150	℃
存储温度 Storage Temperature Range	T _{STG}	-55~+150	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T _L	300	℃

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

电特性 Electrical Characteristics

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
关态特性 Off –Characteristics						
漏－源击穿电压 Drain-Source Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	60	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V, T _C =25℃	－	-	1.0	μA
		V _{DS} =60V, V _{GS} =0V, T _C =125℃	－	3.0	-	μA
正向栅极体漏电流 Forward Gate-body leakage current	I _{GSSF}	V _{DS} =0V, V _{GS} =+20V	-	-	100	nA
反向栅极体漏电流 Reverse Gate-body leakage current	I _{GSSR}	V _{DS} =0V, V _{GS} =-20V	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	2.5	-	3.5	V
静态导通电阻 Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V , I _D =15A	-	2.4	2.6	mΩ
栅极电阻 Gate resstance	R _g	F=1MHz	-	1.6	-	Ω
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V f=1.0MHz	-	3115	-	pF
输出电容 Output capacitance	C _{oss}		-	742	-	pF
反向传输电容 Reverse transfer capacitance	C _{rss}		-	27	-	pF
开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	t _{d(on)}	V _{DD} =30V I _D =15A R _G =4.7Ω V _{GS} =10V(注4, 5)	-	20	-	ns
上升时间 Turn-On rise time	t _r		-	35	-	ns
延迟时间 Turn-Off delay time	t _{d(off)}		-	42	-	ns
下降时间 Turn-Off Fall time	t _f		-	13	-	ns
栅极电荷总量 Total Gate Charge	Q _g		-	48	-	nC

栅—源电荷 Gate-Source charge	Q_{gs}	$V_{DD}=30V, I_D=30A, V_{GS}=10V$ (注4, 5)	-	17	-	nC
栅—漏电荷 Gate-Drain charge	Q_{gd}		-	10	-	nC
漏—源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings						
正向最大连续电流 Maximum Continuous Drain	I_{SD}		-	-	140	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	560	A
正向压降 Drain-Source Diode Forward	V_{SD}	$V_{GS}=0V, I_S=30A$	-	-	1.2	V
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=30A, V_R=48V$	-	50	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		$dI_F/dt=100A/\mu s$	-	76	-

注释:

- 1 额定值仅指规格书中25度壳温下的最大绝对值, 若壳温高于25度, 需根据实际环境条件降额;
- 2 脉冲时间5 μs , 脉冲温度受限于最大结温;
- 3 耗散功率值会随着温度变化而变化, 当大于25度时耗散功率值随着温度每上升1度减少0.87W/°C;
- 4 脉冲测试: 脉冲宽度 $\leq 380\mu s$, 占空比 $\leq 2\%$;
- 5 基本不受工作温度的影响;

特性曲线 Typical Characteristics

图 1. 输出特性

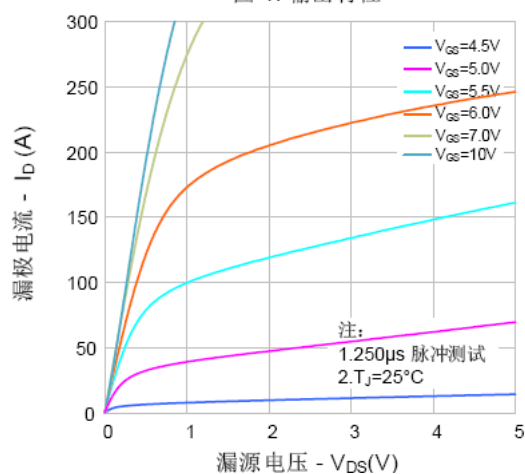


图 2. 传输特性

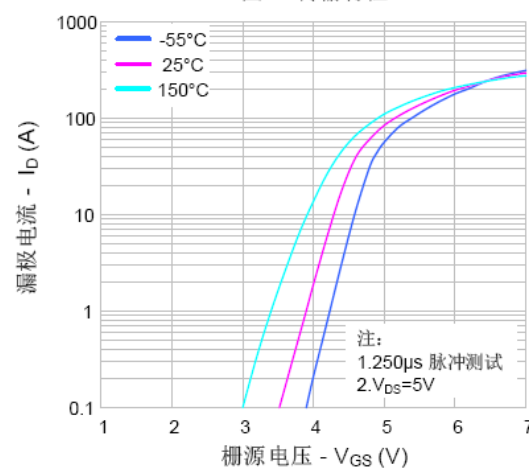


图 3. 导通电阻 vs. 漏极电流

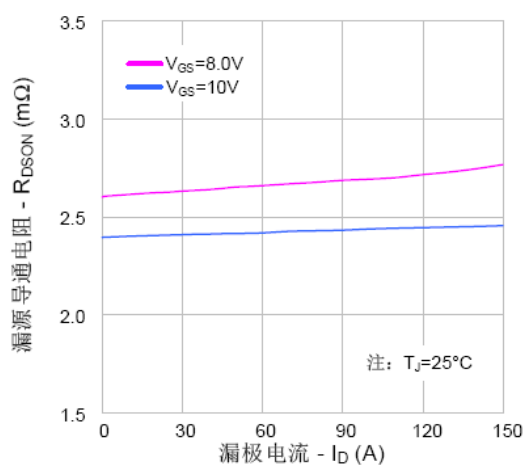


图 4. 导通电阻 vs. 栅源电压

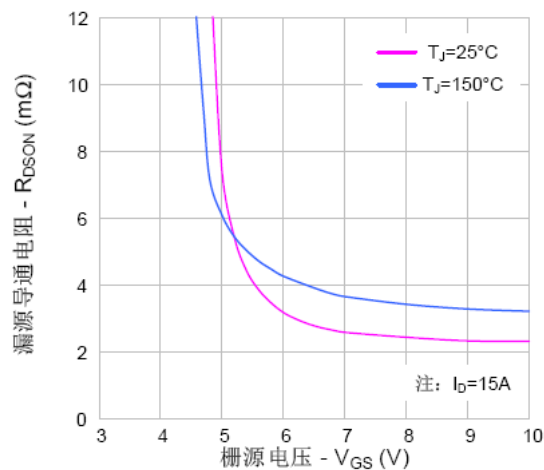


图 5. 开启电压 vs. 温度特性

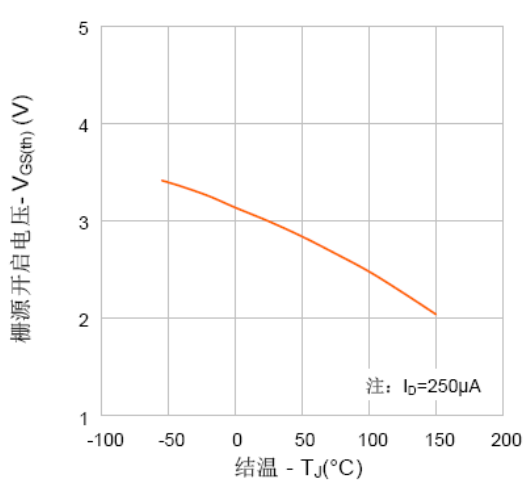
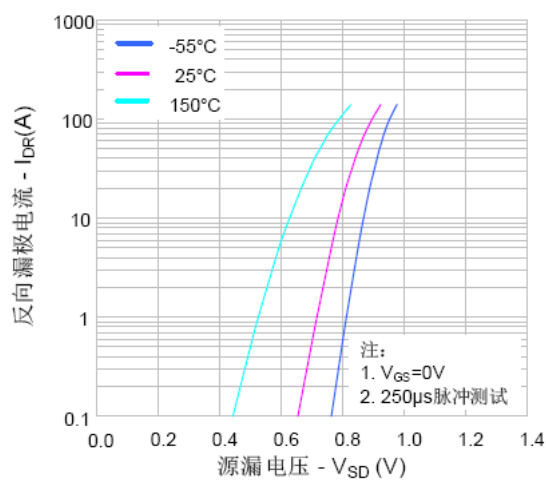


图 6. 体二极管正向压降 vs. 源极电流和温度



特性曲线 Typical Characteristics

图7. 电容特性

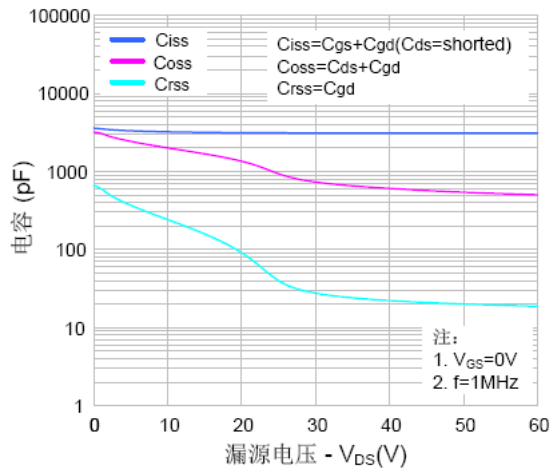


图8. 电荷量特性

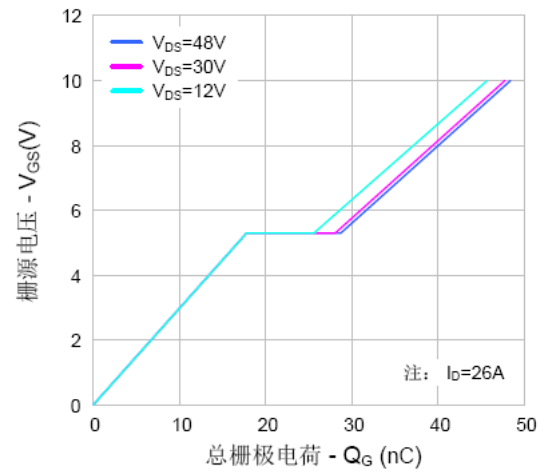


图9. 击穿电压 vs. 温度特性

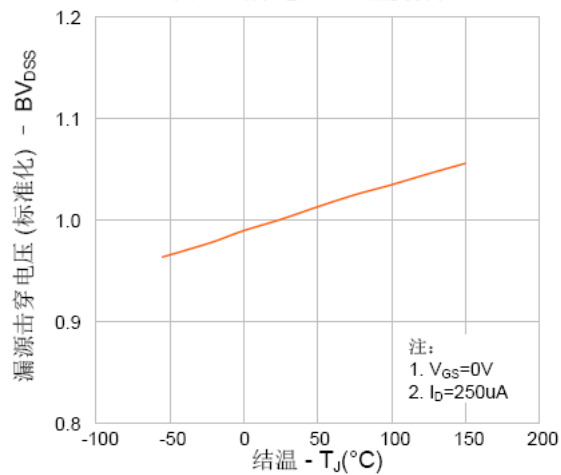


图10. 导通电阻 vs. 温度特性

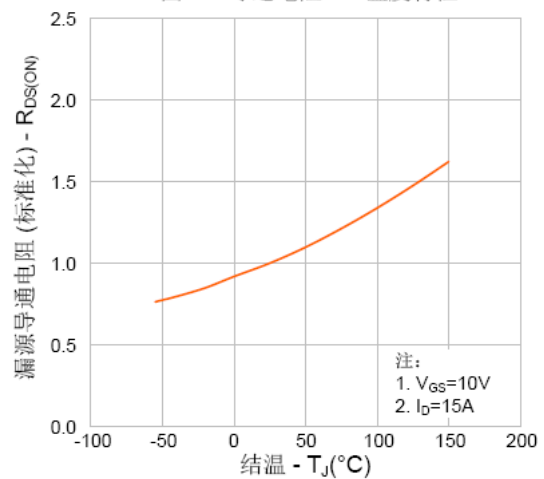


图11. 最大安全工作区域

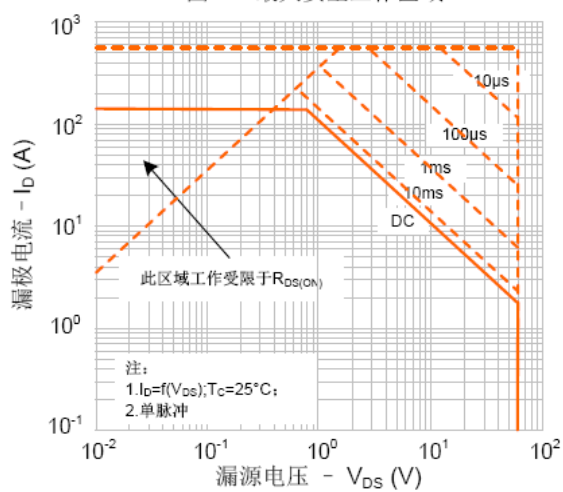
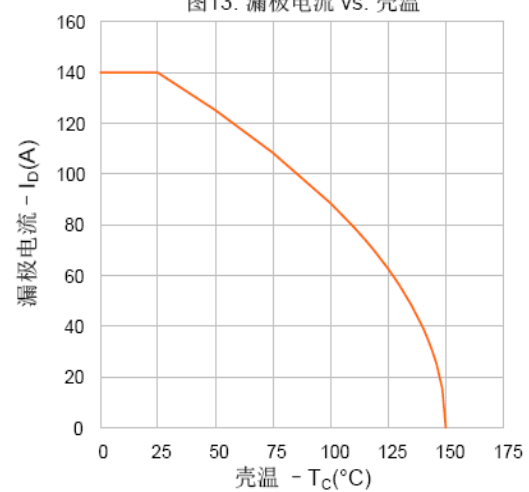
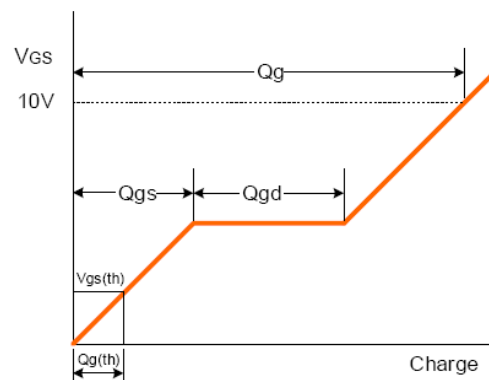
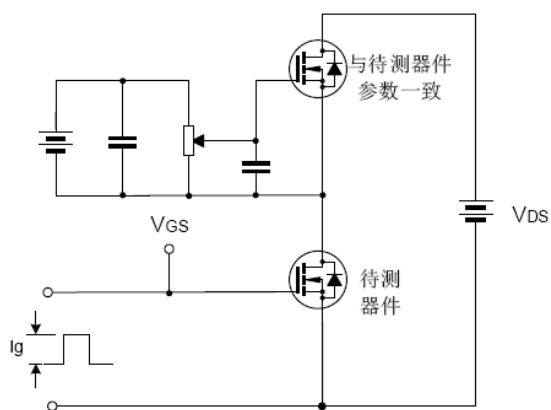


图13. 漏极电流 vs. 壳温

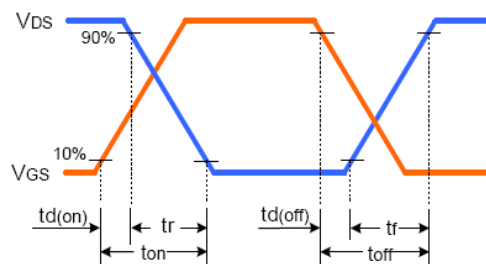
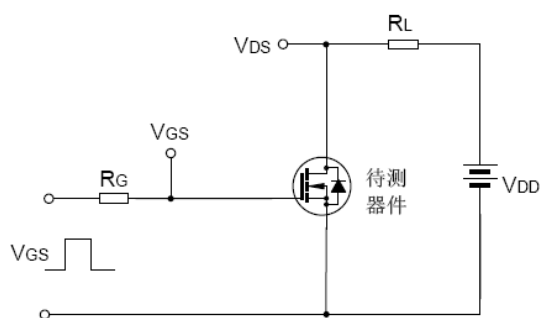


典型测试电路

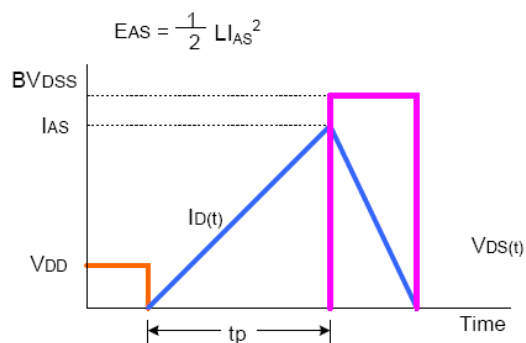
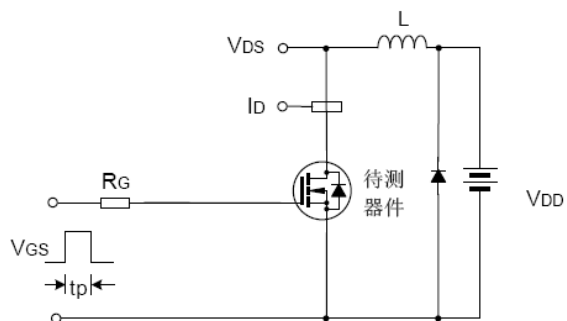
栅极电荷量测试电路及波形图



开关时间测试电路及波形图

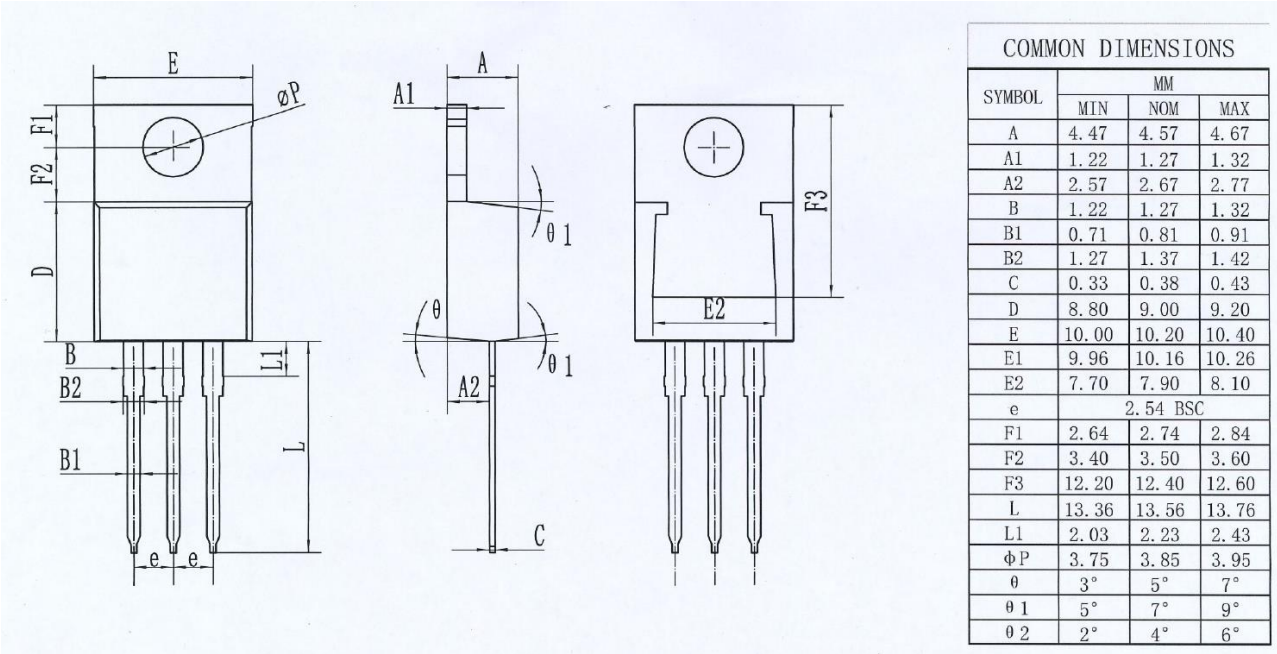


EAS测试电路及波形图



外形尺寸 PACKAGE MECHANICAL DATA

TO-220



TO-263

