



IRF3205

主要参数

Main Characteristics

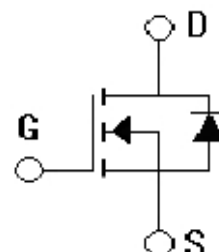
I_D	110A
V_{DS}	55 V
$R_{DS(on)}$ (@ $V_{GS}=10V$)	8 m Ω
Q_g	78 nC

用途

高频开关电源
UPS 电源

Applications

High efficiency switch mode power supplies
UPS Power

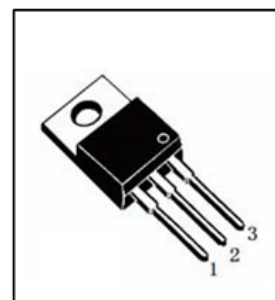


产品特性

低栅极电荷
低 C_{rss} (典型值 197pF)
开关速度快
产品全部经过雪崩测试
高抗 dv/dt 能力
RoHS 产品

Features

Low gate charge
Low C_{RSS} (typical 197pF)
Fast switching
100% avalanche tested
Improved dv/dt capability
RoHS product



产品中有毒有害物质或元素的名称及含量

部件名称 含量要求	有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
引线框	○	○	○	○	○	○
塑封树脂	○	○	○	○	○	○
管 芯	○	○	○	○	○	○
内引线	○	○	○	○	○	○
焊 料	×	○	○	○	○	○
说 明	○：表示该元素的含量在 SJ/T11363-2006 标准的限量要求以下。 ×：表示该元素的含量超出 SJ/T11363-2006 标准的限量要求。 目前产品的焊料中含有铅 (Pb) 成分，但属于欧盟 RoHS 指令豁免范围。					

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}	55	V
连续漏极电流 Drain Current -continuous	I _D	110	A
最大脉冲漏极电流 (注 1) Drain Current – pulse (note 1)	I _{DM}	440	A
最高栅源电压 Gate-Source Voltage	V _{GSS}	±20	V
单脉冲雪崩能量 (注 2) Single Pulsed Avalanche Energy (note 2)	E _{AS}	2970	mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I _{AR}	60.0	A
重复雪崩能量 (注 1) Repetitive Avalanche Current (note 1)	E _{AR}	20	mJ
二极管反向恢复最大电压变化速率 (注 3) Peak Diode Recovery dv/dt (note 3)	dv/dt	5.0	V/ns
耗散功率 Power Dissipation	P _D	200	W
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	℃

*漏极电流由最高结温限制 *Drain current limited by maximum junction temperature

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	55	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} / ΔT _J	I _D =250μA, referenced to 25℃	-	0.057	-	V/℃
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =55V, V _{GS} =0V, TC=25℃	—	—	1	μA
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =44V, V _{GS} =0V, TC=125℃	—	—	10	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	2.0	-	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V , I _D =60A	-	7	8	mΩ
正向跨导 Forward Transconductance	g _{fs}	V _{DS} =28V, I _D =60A	-	43	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C _{iss}	V _{DS} =25,V _{GS} =0V f=1.0MHz	-	2750		pF
输出电容 Output capacitance	C _{oss}		-	749		pF
反向传输电容 Reverse transfer capacitance	C _{rss}		-	197		pF
开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	t _{d(on)}	V _{DD} =28V I _D =60A R _G =25Ω V _{GS} =10V	-	17		ns
上升时间 Turn-On rise time	t _r		-	122		ns
延迟时间 Turn-Off delay time	t _{d(off)}		-	57		ns
下降时间 Turn-Off Fall time	t _f		-	72		ns
栅极电荷总量 Total Gate Charge	Q _g	V _{DS} =44V ,I _D =60A V _{GS} =10V	-	78		nC
栅—源电荷 Gate-Source charge	Q _{gs}		-	13.2	-	nC
栅—漏电荷 Gate-Drain charge	Q _{gd}		-	37.8	-	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	IS		-	-	110	A
正向最大脉冲电流 Maximum Pulsed Drain-Source	ISM		-	-	440	A
正向压降 Drain-Source Diode Forward	VFSD	VGS=0V, IS=60A	-	-	1.3	V
反向恢复时间 Reverse recovery time	trr	VGS=0V, IS=60A dIF/dt=100A/μs	-	67	127	ns
反向恢复电荷 Reverse recovery charge	Qrr		-	163	253	μC

热特性 Thermal Characteristics

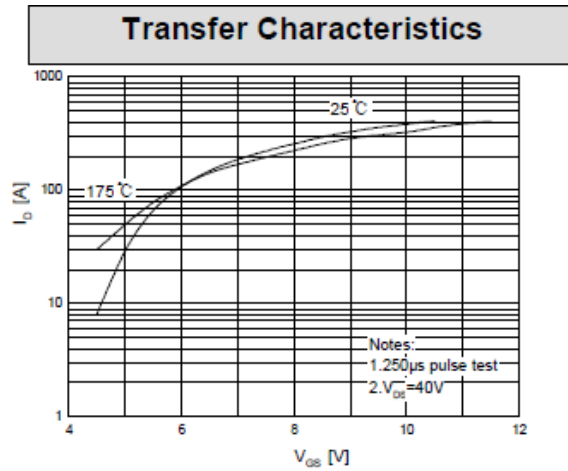
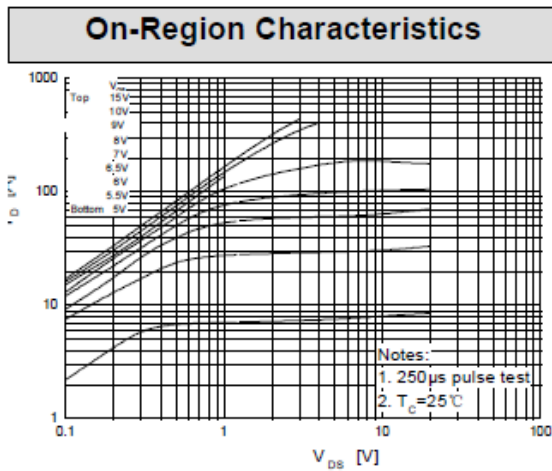
项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	0.75	℃/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	Rth(j-A)	62.5	℃/W

注释:

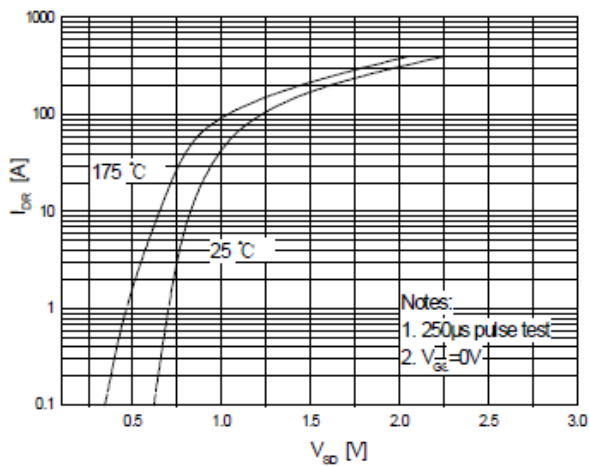
- 1: 脉冲宽度由最高结温限制
- 2: L=0.5mH, IAS=60A, VDD=50V, RG=25Ω, 起始结温 TJ=25℃
- 3: ISD ≤60A, di/dt ≤300A/μs, VDD≤BVDSS, 起始结温 TJ=25℃
- 4: 脉冲测试: 脉冲宽度≤300μs, 占空比≤2%
- 5: 基本与工作温度无关

Pulse width limited by maximum junction temperature
L=0.5mH, IAS=60A, VDD=50V, RG=25 Ω, Starting TJ=25℃
ISD ≤60A, di/dt ≤300A/μs, VDD≤BVDSS, Starting TJ=25℃
Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%
Essentially independent of operating temperature

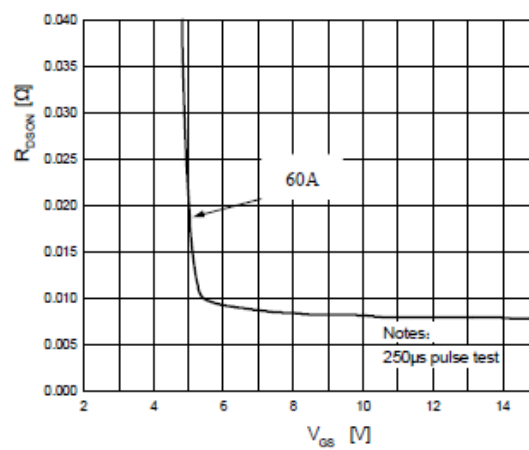
特征曲线 Typical Characteristics (curves)



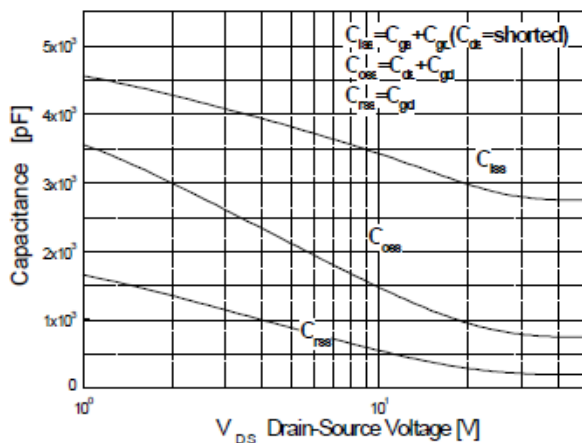
Body Diode Forward Voltage Variation vs. Source Current and Temperature



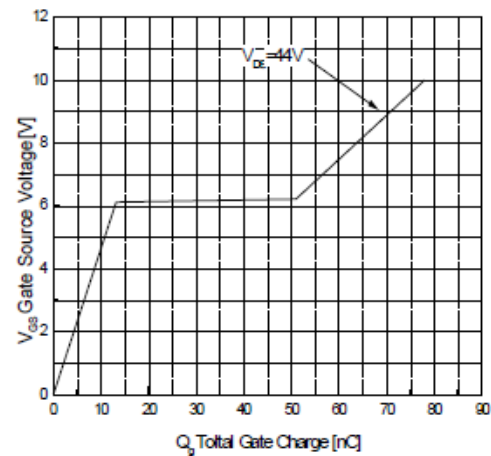
On-Resistance Variation vs. Drain Current and Gate Voltage

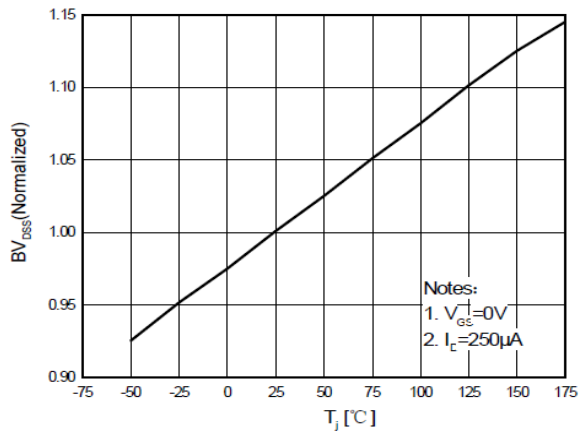
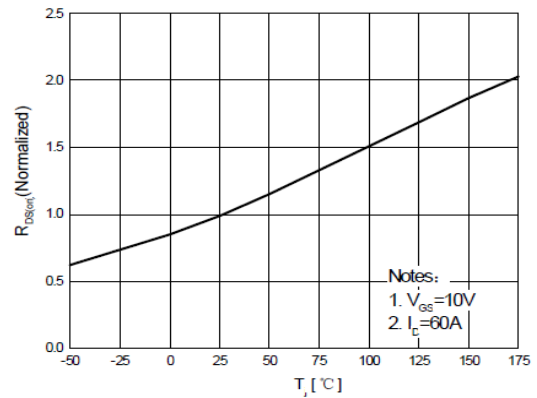
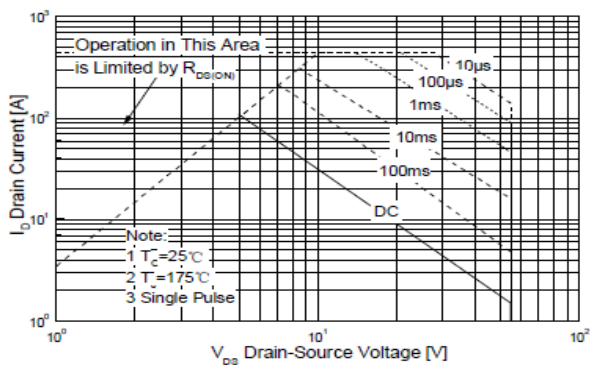
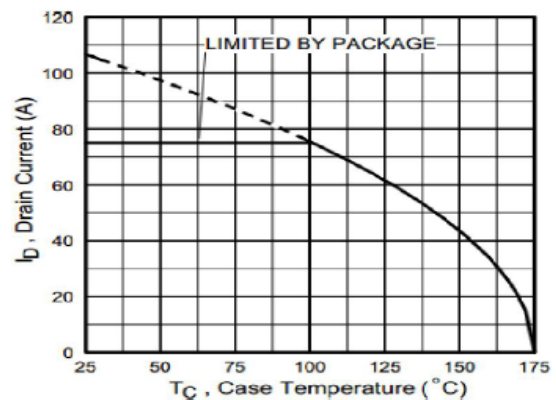


Capacitance Characteristics



Gate Charge Characteristics



**Breakdown Voltage Variation
vs. Temperature****On-Resistance Variation
vs. Temperature****Maximum Safe Operating Area****Maximum Drain Current
vs. Case Temperature****Transient Thermal Response Curve**