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2014年1月

FDP032N08

N 沟道 PowerTrench[®] MOSFET 75 V, 235 A, 3.2 m Ω

特性

- $R_{DS(on)}$ = 2.5 $m\Omega$ (Typ.) @ V_{GS} = 10 V, I_D = 75 A
- 快速开关速度
- 低栅极电荷
- 高性能沟道技术可实现极低的 R_{DS(on)}
- 高功率和高电流处理能力
- 符合 RoHS 标准

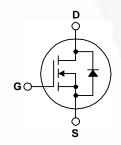
说明

此 N 沟道 MOSFET 采用飞兆半导体先进的 PowerTrench[®] 工艺 生产,这一先进工艺是专为最大限度地降低导通电阻并保持卓越 开关性能而定制的。

应用

- 用于 ATX/ 服务器 / 通信 PSU 的同步整流
- 电池保护电路
- 电机驱动和不间断电源





MOSFET 最大额定值 T_C =25℃ 除非另有说明。

符号	参数		FDP032N08	单位
V_{DSS}	漏极一源极电压		75	V
V_{GSS}	栅极一源极电压		±20	V
	漏极电流 - 连续(T _C =25°C,硅片受降	艮)	235	Α
I _D	- 连续(T _C =100°C,硅片受	を限)	165	Α
	- 连续(T _C =25°C,封装受)	限)	120	Α
I _{DM}	漏极电流 - 脉冲	(说明 1)	940	Α
E _{AS}	单脉冲雪崩能量	(说明 2)	1995	mJ
dv/dt	峰值二极管恢复 dv/dt	(说明 3)	6.0	V/ns
D	$(T_C = 25^{\circ}C)$		375	W
P_{D}	功耗 - 降额 25℃ 以上		2.5	W/°C
T _J , T _{STG}	工作和存储温度范围		-55 至 +175	°C
T_L	用于焊接的最大引脚温度, 距离外壳 1/8", 持续 5 秒		300	°C

热性能

符号	参数	FDP032N08	单位
$R_{\theta JC}$	结至外壳热阻最大值	0.4	°C/W
$R_{\theta JA}$	结至环境热阻最大值	62.5	C/VV

封装标识与定购信息

器件编号	顶标	封装	包装方法	卷尺寸	带宽	数量
FDP032N08	FDP032N08	TO-220	塑料管	不适用	不适用	50 个

电气特性 T_C =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
关断特性						
BV _{DSS}	漏极一源极击穿电压	$I_D = 250 \mu A, V_{GS} = 0 V, T_C = 25^{\circ}C$	75	-	-	V
ΔBV _{DSS} / ΔT _J	击穿电压温度系数	I _D =250 μA,参考条件是 25°C	-	0.05	-	V/°C
1	零栅极电压漏极电流	V _{DS} = 75 V, V _{GS} = 0 V	-	-	1	μА
IDSS	令伽似电压꼐似电流	$V_{DS} = 75 \text{ V}, T_{C} = 150^{\circ}\text{C}$	-	•	500	μА
I_{GSS}	栅极 - 体漏电流	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{ V}$	-	ı	±100	nA

导通特性

V _{GS(th)}	栅极阈值电压	$V_{GS} = V_{DS}, I_{D} = 250 \mu A$	2.5	3.5	4.5	V
R _{DS(on)}	漏极至源极静态导通电阻	$V_{GS} = 10 \text{ V}, I_D = 75 \text{ A}$	-	2.5	3.2	mΩ
g _{FS}	正向跨导	$V_{DS} = 10 \text{ V}, I_{D} = 75 \text{ A}$	-	180	-	S

动态特性

C _{iss}	输入电容	V 25 V V 20 V	-	11400	15160	pF
Coss	输出电容	$V_{DS} = 25 \text{ V}, V_{GS} = 0 \text{ V},$ $V_{DS} = 1 \text{ MHz}$	-	1360	1810	pF
C _{rss}	反向传输电容	- 1 Willia	- \	595	800	pF
$Q_{g(tot)}$	10 V 的栅极电荷总量	$V_{DS} = 60 \text{ V}, I_{D} = 75 \text{ A},$	-	169	220	nC
Q_{gs}	栅极 - 源极栅极电荷	V _{GS} = 10 V	-	60	-	nC
Q_{gd}	栅漏极"米勒"电荷	(说明 4)	-	47	-	nC

开关特性

t _{d(on)}	导通延迟时间		-	230	470	ns
t _r		$V_{DD} = 37.5 \text{ V}, I_D = 75 \text{ A},$	-	191	392	ns
t _{d(off)}	关断延迟时间	$R_G = 25 \Omega$, $V_{GS} = 10 V$	-	335	680	ns
t _f	关断下降时间	(说明 4)	-	121	252	ns

漏源极二极管特性

I _S	漏源极二极管最大正向连续电流	漏源极二极管最大正向连续电流		-	235	Α
I _{SM}	漏源极二极管最大正向脉冲电流		-	-	940	Α
V_{SD}	漏源极二极管正向电压	$V_{GS} = 0 \text{ V}, I_{SD} = 75 \text{ A}$	-	-	1.3	V
t _{rr}	反向恢复时间	$V_{GS} = 0 \text{ V}, I_{SD} = 75 \text{ A},$	-	53	-	ns
Q_{rr}	反向恢复电荷	$dI_F/dt = 100 A/\mu s$	-	77	-	nC

- 1. 重复额定值: 脉冲宽度受限于最大结温。
- 2. L=0.71 mH, I_{AS} =75 A, V_{DD} =50 V, R_{G} =25 Ω , 开始 T_{J} =25°C。 3. I_{SD} \leq 75 A, I_{J} I_{J}
- 4. 本质上独立于工作温度的典型特性。

典型性能特征

图 1. 导通区域特性

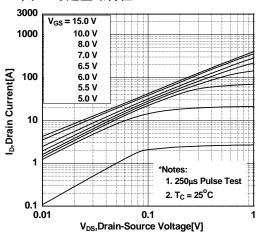


图 3. 导通电阻变化与漏极电流和栅极电压的关系

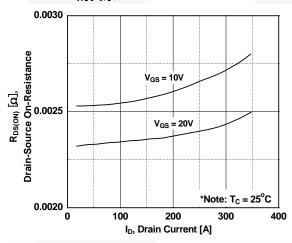


图 5. 电容特性

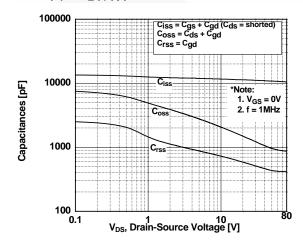


图 2. 传输特性

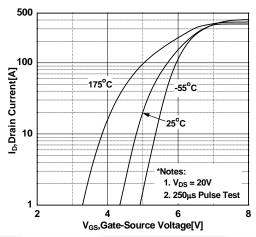


图 4. 体二极管正向电压变化与源极电流 的关系和温度

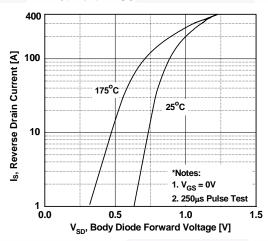
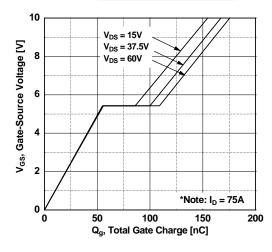


图 6. 栅极电荷特性



典型性能特征 (接上页)

图 7. 击穿电压变化与温度的关系

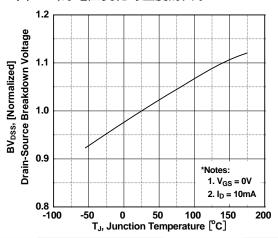


图 8. 导通电阻变化与温度的关系

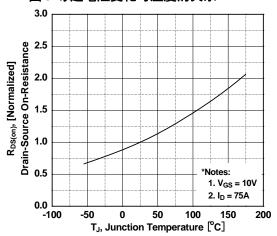


图 9. 最大安全工作区

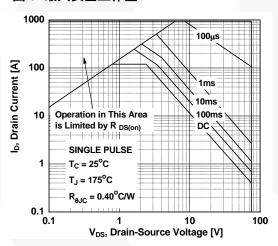


图 10. 最大漏极电流与壳体温度的关系

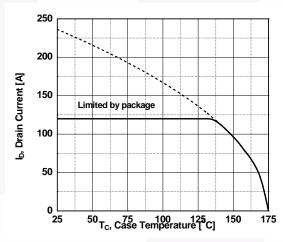
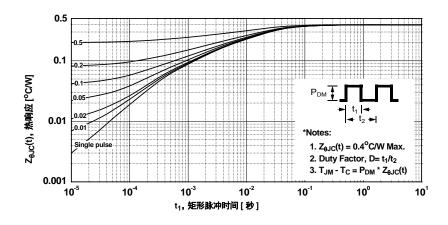


图 11. 瞬态热响应曲线



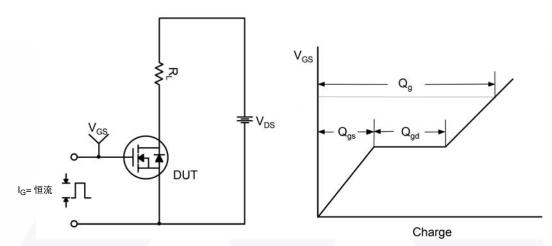


图 12. 栅极电荷测试电路与波形

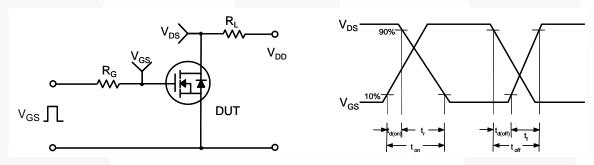


图 13. 阻性开关测试电路与波形

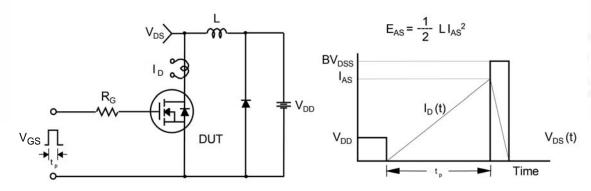


图 14. 非箝位感性开关测试电路与波形

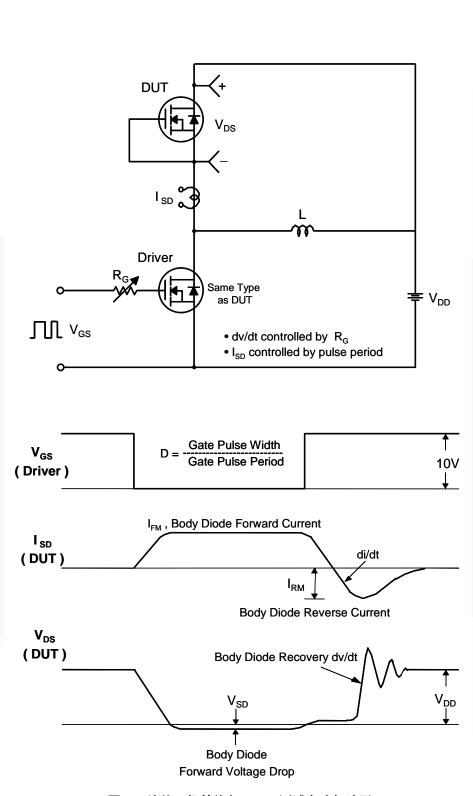
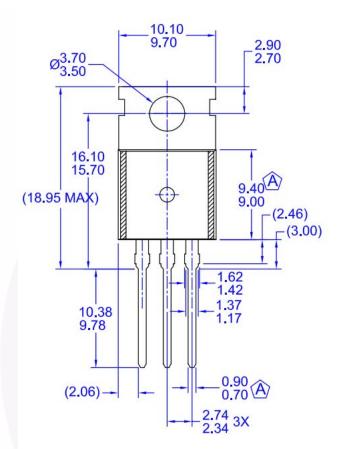
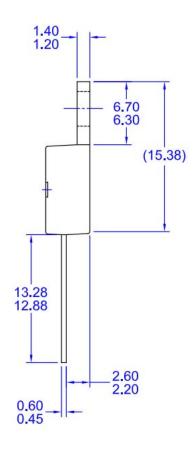
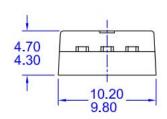


图 15. 峰值二极管恢复 dv/dt 测试电路与波形

机械尺寸







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- (A) CONFORMS TO JEDEC TO-220 VARIATION AB EXCEPT WHERE NOTED
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- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
- D) DRAWING FILE/REVISION: MKT-TO220Y03REV1

图 16. TO220, 模塑, 3 引脚, 非 Jedec 变化 AB

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