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FDMC86260ET150

N 沟道 Power Trench[®] MOSFET

150 V, 25 A, 34 mΩ

特性

- T_J 额定值扩展: 175°C
- 最大 r_{DS(on)} = 34 mΩ (V_{GS} = 10 V, I_D = 5.4 A)
- 最大 r_{DS(on)} = 44 mΩ (V_{GS} = 6 V, I_D = 4.8 A)
- 高性能沟道技术可实现极低的 r_{DS(on)}
- 100% 经过 UIL 测试
- 终端为无铅产品
- 符合 RoHS 标准

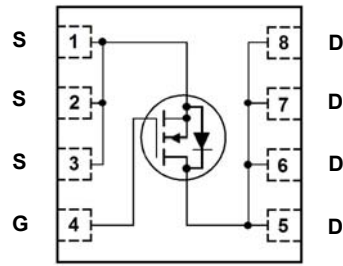
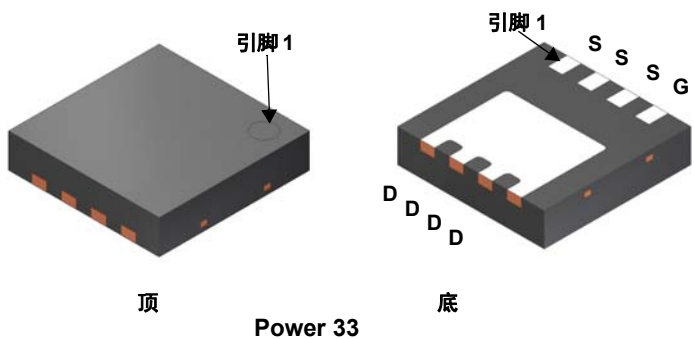


概述

该 N 沟道 MOSFET 采用飞兆先进的 PowerTrench[®] 工艺生产, 这一先进工艺是专为最大限度地降低通态电阻并保持卓越开关性能而定制的。

应用

- DC-DC 转换



MOSFET 最大额定值 T_A = 25 °C 除非另有说明

符号	参数	额定值	单位
V _{DS}	漏极-源极电压	150	V
V _{GS}	栅极-源极电压	±20	V
I _D	漏极电流 - 连续	T _C = 25 °C (注 5)	25
	- 连续	T _C = 100 °C (注 5)	18
	- 连续	T _A = 25 °C (注 1a)	5.4
	- 脉冲	(注 4)	116
E _{AS}	单脉冲雪崩能量	(注 3)	121
P _D	功耗	T _C = 25 °C	65
	功耗	T _A = 25 °C (注 1a)	2.8
T _J , T _{STG}	工作和存储结温范围	-55 ? +175	°C

热性能

R _{θJC}	结至外壳热阻	(注 1)	2.3	°C/W
R _{θJA}	结至环境热阻	(注 1a)	53	

封装标识与订购信息

器件标识	器件	封装	卷尺寸	带宽	数量
FDMC86260ET	FDMC86260ET150	Power33	13 "	12 mm	3000 个

FDMC86260ET150 N 沟道 Power Trench[®] MOSFET

电气特性 $T_J = 25^\circ\text{C}$ 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
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关断特性

BV_{DSS}	漏极-源极击穿电压	$I_D = 250\ \mu\text{A}, V_{GS} = 0\ \text{V}$	150			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	击穿电压温度系数	$I_D = 250\ \mu\text{A}$, 参考温度为 25°C		110		mV/ $^\circ\text{C}$
I_{DSS}	零栅极电压漏极电流	$V_{DS} = 120\ \text{V}, V_{GS} = 0\ \text{V}$			1	μA
I_{GSS}	栅极-源极漏电流	$V_{GS} = \pm 20\ \text{V}, V_{DS} = 0\ \text{V}$			± 100	nA

导通特性

$V_{GS(th)}$	栅极-源极阈值电压	$V_{GS} = V_{DS}, I_D = 250\ \mu\text{A}$	2	2.7	4	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	栅极-源极阈值电压温度系数	$I_D = 250\ \mu\text{A}$, 参考温度为 25°C		-9		mV/ $^\circ\text{C}$
$r_{DS(on)}$	漏极至源极静态导通电阻	$V_{GS} = 10\ \text{V}, I_D = 5.4\ \text{A}$		27	34	m Ω
		$V_{GS} = 6\ \text{V}, I_D = 4.8\ \text{A}$		31	44	
		$V_{GS} = 10\ \text{V}, I_D = 5.4\ \text{A}, T_J = 125^\circ\text{C}$		55	69	
g_{FS}	正向跨导	$V_{DD} = 10\ \text{V}, I_D = 5.4\ \text{A}$		19		S

动态特性

C_{iss}	输入电容	$V_{DS} = 75\ \text{V}, V_{GS} = 0\ \text{V}, f = 1\ \text{MHz}$		1000	1330	pF
C_{oss}	输出电容			105	140	pF
C_{rss}	反向传输电容			4.8	10	pF
R_g	栅极阻抗		0.1	0.6	1.8	Ω

开关特性

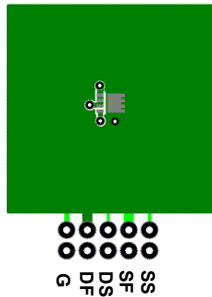
$t_{d(on)}$	导通延迟时间	$V_{DD} = 75\ \text{V}, I_D = 5.4\ \text{A}, V_{GS} = 10\ \text{V}, R_{GEN} = 6\ \Omega$		9.5	19	ns
t_r	上升时间			2	10	ns
$t_{d(off)}$	关断延迟时间			17	30	ns
t_f	下降时间			3.3	10	ns
$Q_g(TOT)$	总栅极电荷	$V_{GS} = 0\ \text{V}$ 至 $10\ \text{V}$	$V_{DD} = 75\ \text{V}, I_D = 5.4\ \text{A}$	15	21	nC
$Q_g(TOT)$	总栅极电荷	$V_{GS} = 0\ \text{V}$ 至 $6\ \text{V}$		9.7	14	nC
Q_{gs}	总栅极电荷			4.0		nC
Q_{gd}	栅极-漏极“米勒”电荷			3.1		nC

漏极-源极二极管特性

V_{SD}	源极-漏极二极管正向电压	$V_{GS} = 0\ \text{V}, I_S = 5.4\ \text{A}$ (注2)		0.77	1.3	V
		$V_{GS} = 0\ \text{V}, I_S = 1.9\ \text{A}$ (注2)		0.72	1.2	V
t_{rr}	反向恢复时间	$I_F = 5.4\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$		64	102	ns
Q_{rr}	反向恢复电荷			85	137	nC

注意:

1. $R_{\theta JA}$ 取决于安装在一平方英寸衬垫, 2oz 铜焊盘以及 FR-4 材质尺寸 1.5 x 1.5in. 的衬垫上的器件。 $R_{\theta CA}$ 由用户的电路板设计确定。



a. 53 安装在 2 oz 最小 1 in² 铜焊盘上的 $^\circ\text{C}/\text{W}$



b. 125 安装在 2 oz 最小铜焊盘上的 $^\circ\text{C}/\text{W}$

2. 脉冲测试: 脉冲宽度: <300 μs , 占空比: <2.0%。

3. E_{AS} 为 121 mJ, 依据起始 $T_J = 25^\circ\text{C}$, $L = 3\ \text{mH}$, $I_{AS} = 9\ \text{A}$, $V_{DD} = 150\ \text{V}$, $V_{GS} = 10\ \text{V}$, 100% 经过测试 ($L = 0.1\ \text{mH}$, $I_{AS} = 22\ \text{A}$)。

4. 有关脉冲编号的更多详情, 请参考图 11 中的 SOA 图形。

5. 计算得到的连续电流仅限于最大结温, 实际连续电流将受限于散热以及电气机械应用的电路板设计。

典型特性 $T_J = 25^\circ\text{C}$ 除非另有说明

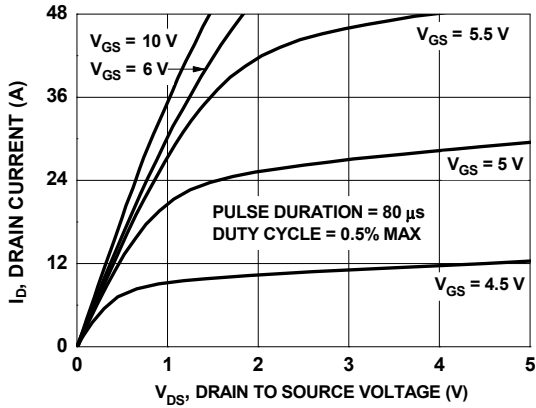


图 1. 通态区域特性

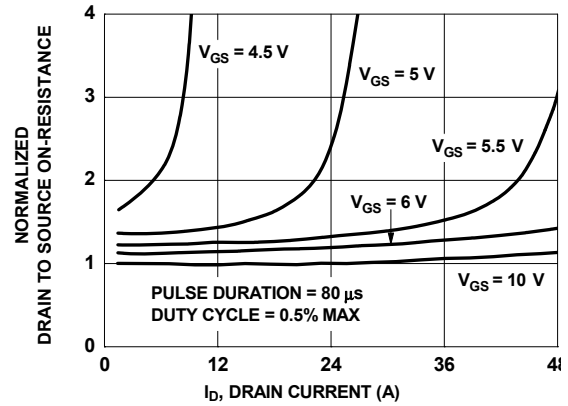


图 2. 标准化导通电阻与漏极电流和栅极电压的关系

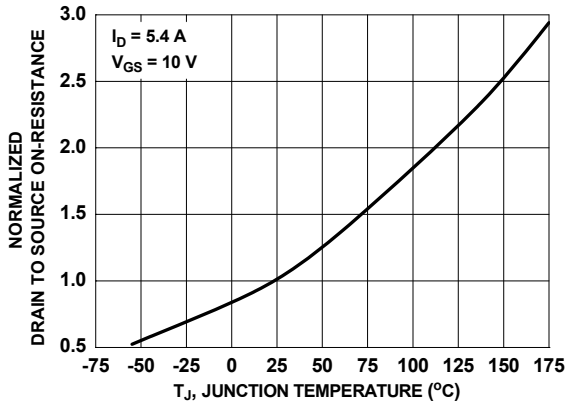


图 3. 标准化导通电阻与结温的关系

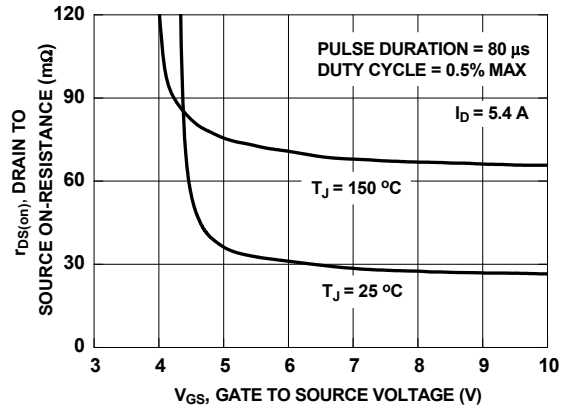


图 4. 导通电阻与栅极 - 源极电压的关系

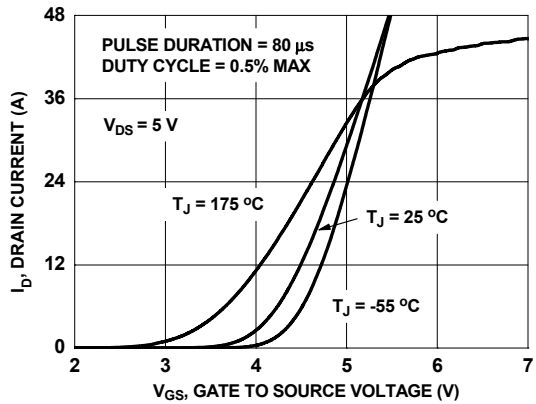


图 5. 转换特性

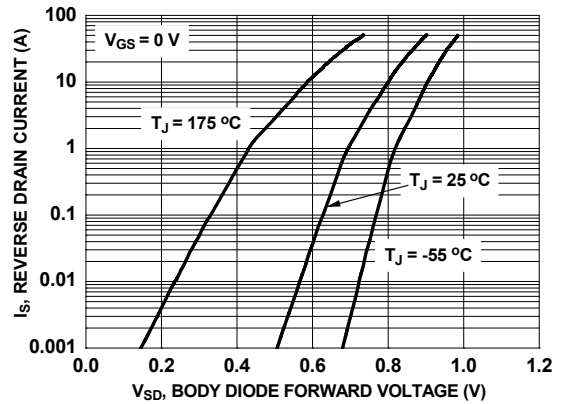


图 6. 源极 - 漏极二极管正向电压与源电流的关系

典型特性 $T_J = 25^\circ\text{C}$ 除非另有说明

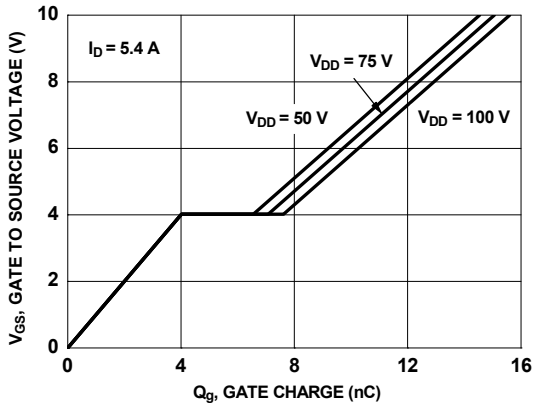


图 7. 栅极电荷特性

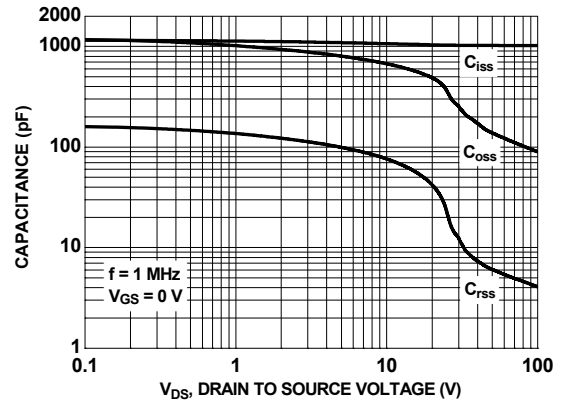


图 8. 电容与漏极 - 源极电压的关系

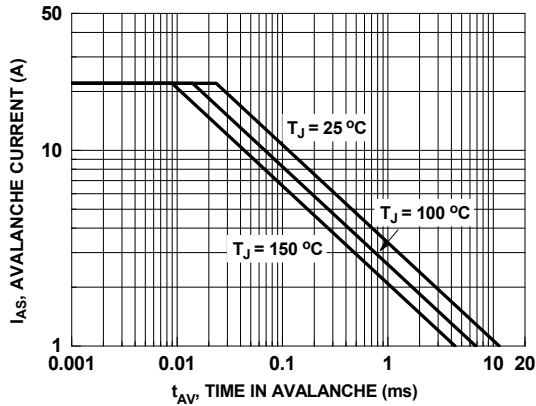


图 9. 非箱位电感开关能力

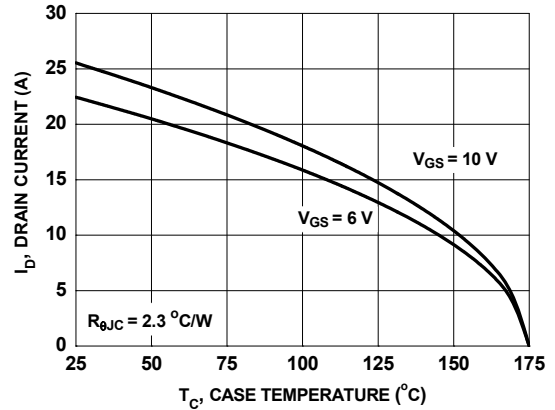


图 10. 最大连续漏极电流与壳温的关系

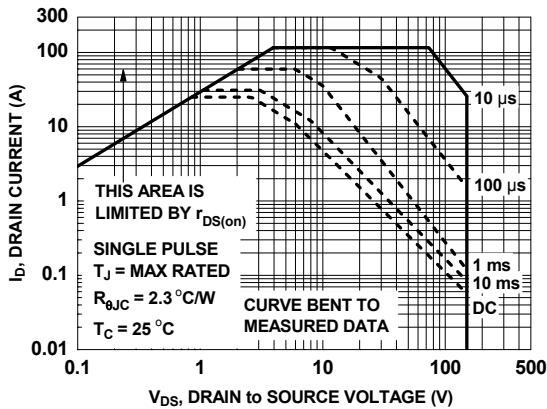


图 11. 正向偏压安全工作区

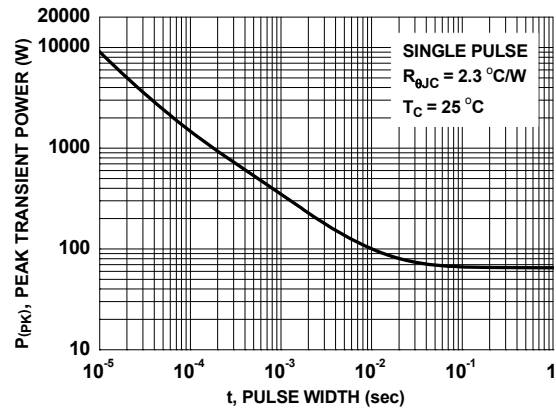


图 12. 单个脉冲最大功耗

典型特性 $T_J = 25^\circ\text{C}$ 除非另有说明

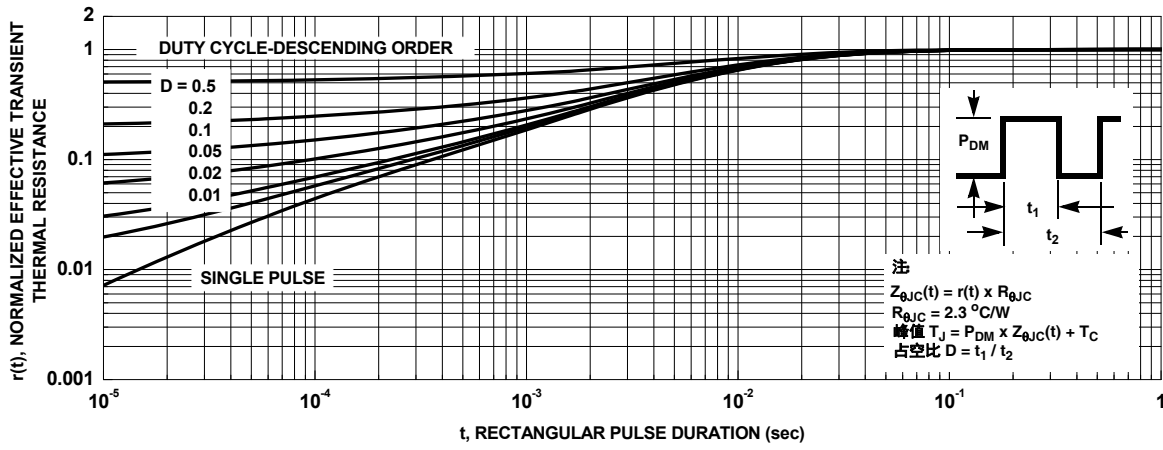
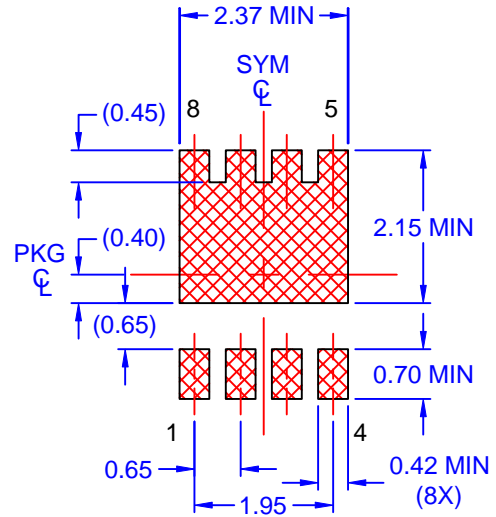
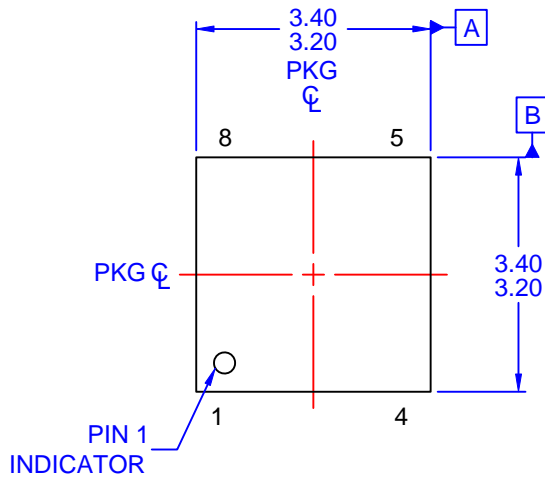
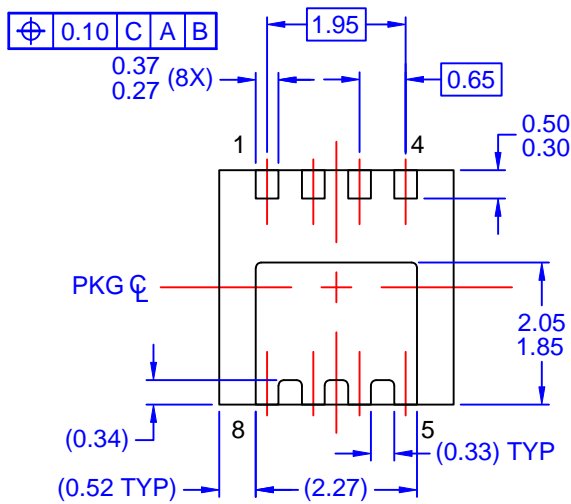
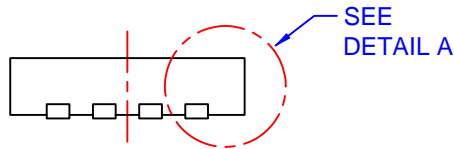


图 13. 结至外壳瞬态热响应曲线

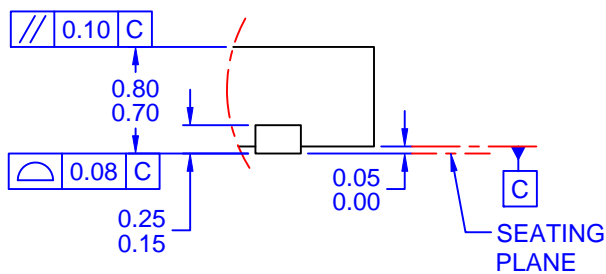


LAND PATTERN RECOMMENDATION



NOTES: UNLESS OTHERWISE SPECIFIED

- A) PACKAGE STANDARD REFERENCE: JEDEC MO-240, ISSUE A, VAR. BA, DATED OCTOBER 2002.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS DO NOT INCLUDE BURRS OR MOLD FLASH. MOLD FLASH OR BURRS DOES NOT EXCEED 0.10MM.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
- E) DRAWING FILE NAME: PQFN08HREV1



DETAIL A
SCALE: 2X

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