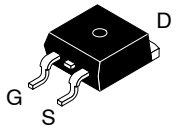
MOSFET – N 沟道, POWERTRENCH®

100 V, 214 A, 3.5 mΩ

FDB035N10A

V_{DSS}	$R_{DS(ON)}$ MAX	I_D MAX
100 V	3.5 mΩ @ 10 V	214 A*

*计算连续电流 (基于最高允许结温)。封装限制电流为 120 A。



D²PAK−3 (TO−263, 3−LEAD)
CASE 418AJ

说明

此 N 沟道 MOSFET 采用 **onsemi** 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。

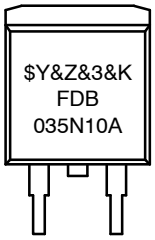
特性

- $R_{DS(on)}$ = 3.0 mΩ (典型值) @ V_{GS} = 10 V, I_D = 75 A
- 快速开关速度
- 低栅极电荷，Q_G = 89 nC (典型值)
- 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

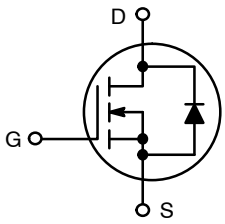
应用

- 用于 ATX / 服务器 / 电信 PSU 的同步整流
- 电池保护电路
- 电机驱动和不间断电源
- 微型太阳能逆变器

MARKING DIAGRAM



$Y	= Logo
&Z	= Assembly Plant Code
&3	= 3−Digit Date Code Format
&K	= 2−Digits Lot Run Traceability Code
FDB035N10A	= Device Code



N 沟道

ORDERING INFORMATION

See detailed ordering and shipping information on page 8 of this data sheet.

MOSFET 最大额定值 (T_C = 25°C 除非另有说明)

符号	参数		FDB035N10A	单位
V_{DSS}	漏极－源极电压		100	V
V_{GSS}	栅极－源极电压		±20	V
I_D	漏极电流	– 连续 (T_C = 25°C, 硅限制)	214*	A
		– 连续 (T_C = 100°C, 硅限制)	151*	
		– 连续 (T_C = 25°C, 封装限制)	120	
I_{DM}	漏极电流	– 脉冲 (说明 1)	856	A
E_{AS}	单脉冲雪崩能量 (说明 2)		658	mJ
dv/dt	二极管恢复 dv/dt 峰值 (说明 3)		6.0	V/ns
P_D	功耗	(T_C = 25°C)	333	W
		– 降低至 25°C 以上	2.22	W/°C
T_J, T_{STG}	工作和存储温度范围		–55 to +175	°C
T_L	用于焊接的最大引线温度，距离外壳 1/8"，持续 5 秒		300	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
(参考译文)
如果电压超过最大额定值表中列出的值范围，器件可能会损坏。如果超过任何这些限值，将无法保证器件功能，可能会导致器件损坏，影响可靠性。
*计算连续电流 (基于最高允许结温)。封装限制电流为 120 A。
1. 重复额定值：脉冲宽度受限于最大结温。
2. 开始 T_J = 25°C, L = 1 mH, I_{AS} = 36.3 A。
3. $I_{SD} \le$ 75 A, di/dt ≤ 200 A/μs, $V_{DD} \le BV_{DSS}$, 开始 T_J = 25°C。

热性能

符号	参数	FDB035N10A	单位
$R_{\theta JC}$	结至外壳热阻最大值	0.45	°C/W
$R_{\theta JA}$	结至环境热阻 (最小尺寸的 2 盎司焊盘) 最大值。	62.5	
	结至环境热阻 (1 in^2 2 盎司焊盘) 最大值。	40	

电气特性 (T_C = 25°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
关断特性						
BV_{DSS}	漏极－源极击穿电压	I_D = 250 μA, V_{GS} = 0 V, T_C = 25°C	100	–	–	V
ΔBV_{DSS} / ΔT_J	击穿电压温度系数	I_D = 250 μA, 温度参考 25°C		0.07	–	V/°C
I_{DSS}	零栅极电压漏极电流	V_{DS} = 80 V, V_{GS} = 0 V	–	–	1	μA
		V_{DS} = 80 V, T_C = 150°C	–	–	500	
I_{GSS}	栅极 – 体漏电流	V_{GS} = ±20 V, V_{DS} = 0 V	–	–	±100	nA
导通特性						
$V_{GS(th)}$	栅极阈值电压	V_{GS} = V_{DS}, I_D = 250 μA	2.0	–	4.0	V
$R_{DS(on)}$	漏极至源极静态导通电阻	V_{GS} = 10 V, I_D = 75 A	–	3.0	3.5	mΩ
g_{FS}	正向跨导	V_{DS} = 10 V, I_D = 75 A	–	167	–	S
动态特性						
C_{iss}	输入电容	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	–	5485	7295	pF
C_{oss}	输出电容		–	2430	3230	pF
C_{rss}	反向传输电容		–	210	–	pF
$Q_{g(tot)}$	10 V 的栅极电荷总量	V_{DS} = 80 V, I_D = 75 A, V_{GS} = 10 V (说明 4)	–	89	116	nC
Q_{gs}	栅极 – 源极栅极电荷		–	24	–	nC
Q_{gs2}	栅极平台电荷阈值		–	8	–	nC
Q_{gd}	栅极 – 漏极 “ 米勒 ” 电荷		–	25	–	nC
开关特性						
$t_{d(on)}$	导通延迟时间	V_{DD} = 50 V, I_D = 75 A, V_{GS} = 10 V, R_G = 4.7 Ω (说明 4)	–	22	54	ns
t_r	开通上升时间		–	54	118	ns
$t_{d(off)}$	关断延迟时间		–	37	84	ns
t_f	关断下降时间		–	11	32	ns
ESR	等效串联电阻 (G−S)	f = 1 MHz	–	1.2	–	Ω
漏极 – 源极二极管特性						
I_S	漏极 – 源极二极管最大正向连续电流		–	–	214*	A
I_{SM}	漏极 – 源极二极管最大正向脉冲电流		–	–	856	A
V_{SD}	漏极 – 源极二极管正向电压	V_{GS} = 0 V, I_{SD} = 75 A	–	–	1.25	V
t_{rr}	反向恢复时间	V_{GS} = 0 V, I_{SD} = 75 A, V_{DD} = 80 V, dI_F/dt = 100 A/μs	–	72	–	ns
Q_{rr}	反向恢复电荷		–	129	–	nC

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
(参考译文)
除非另有说明，“电气特性”表格中列出的是所列测试条件下的产品性能参数。如果在不同条件下运行，产品性能可能与“电气特性”表格中所列性能参数不一致。
*计算连续电流 (基于最高允许结温)。封装限制电流为 120 A。
4. 本质上独立于工作温度的典型特性。

典型性能特征

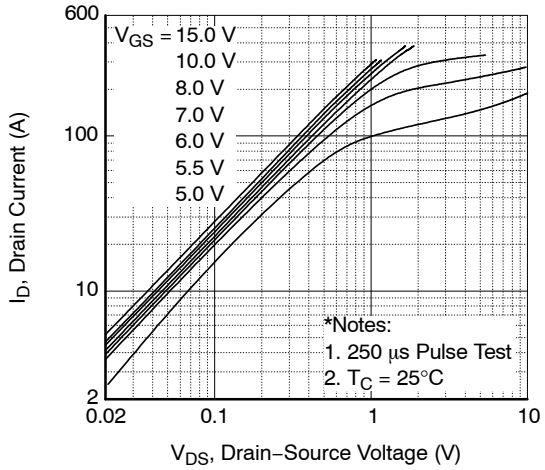


图 1. 导通区域特性

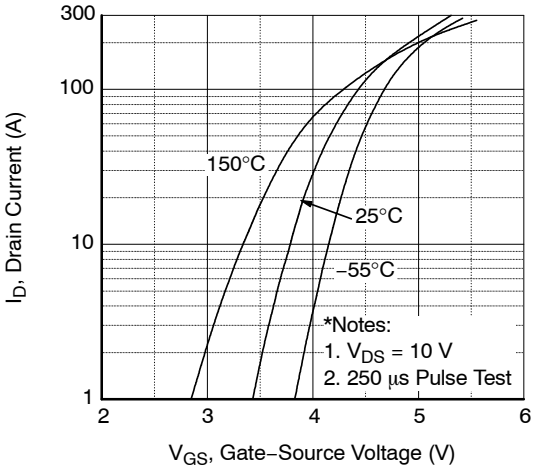


图 2. 传输特性

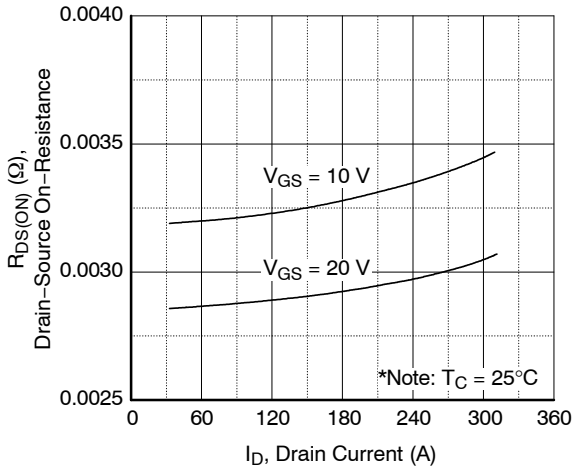


图 3. 导通电阻变化与漏极电流和栅极电压

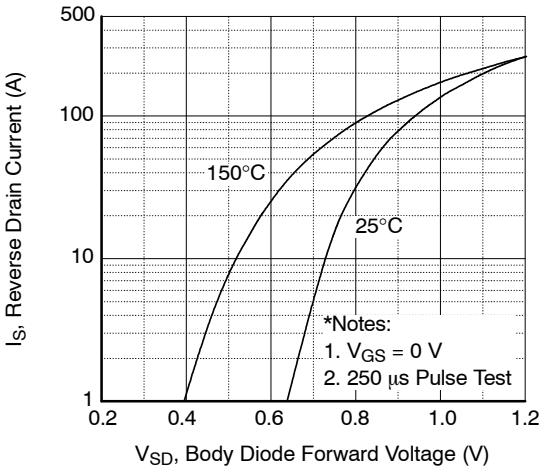


图 4. 体二极管正向电压变化与源极电流和温度

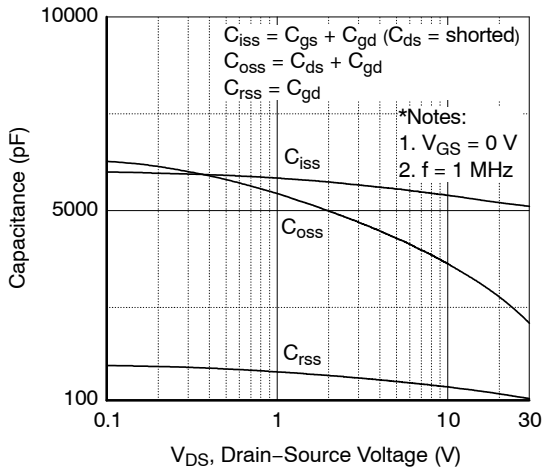


图 5. 电容特性

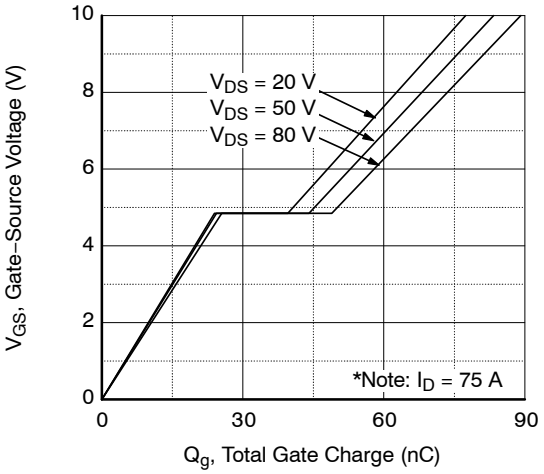


图 6. 栅极电荷

典型性能特征 (continued)

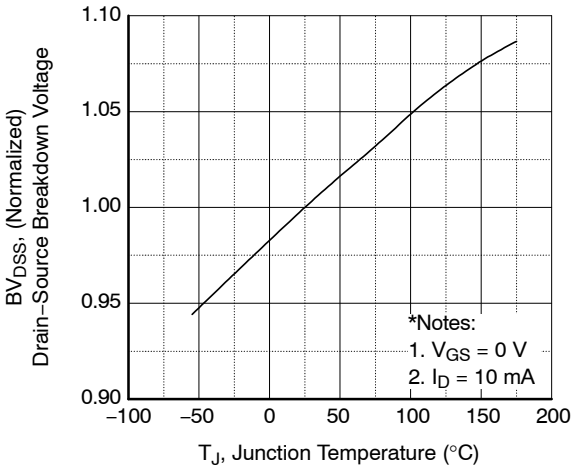


图 7. 击穿电压变化与温度

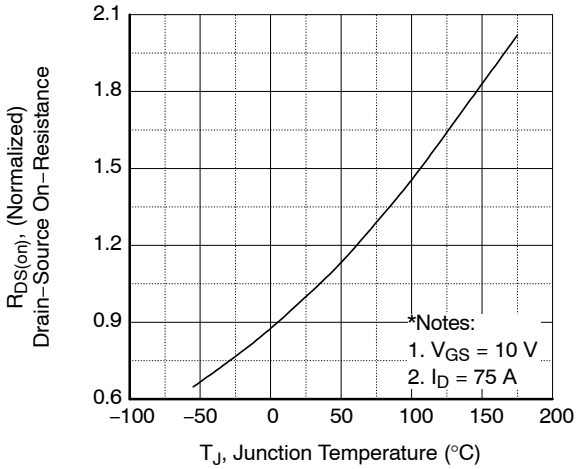


图 8. 导通电阻变化与温度

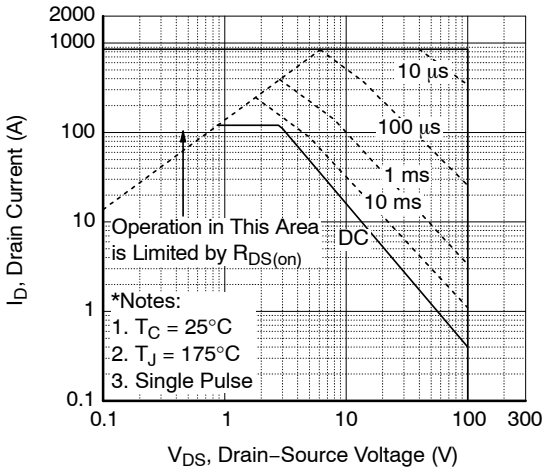


图 9. 最大安全工作区

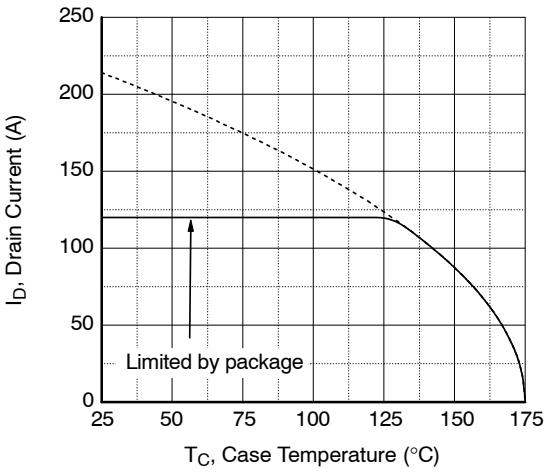


图 10. 最大漏极电流与外壳温度

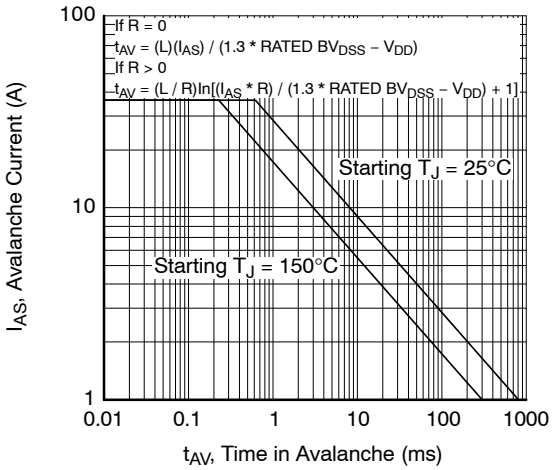


图 11. 非箝位电感开关能力

典型性能特征 (continued)

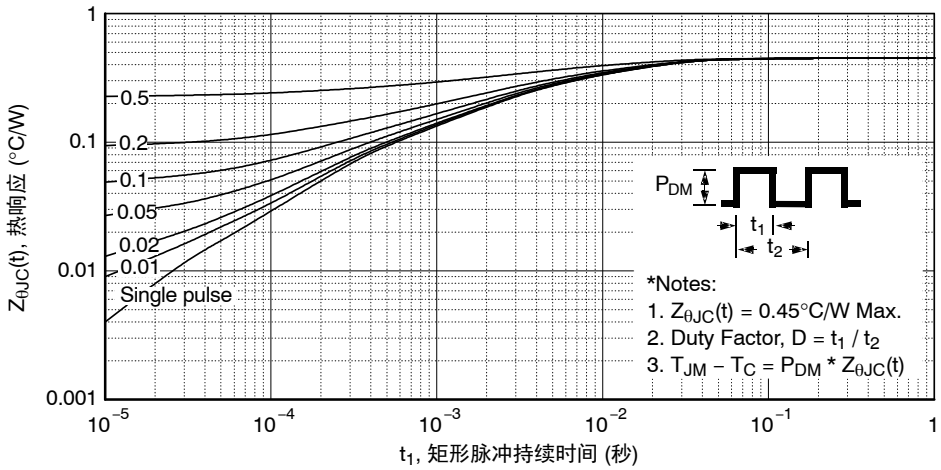


图 12. 瞬态热响应曲线

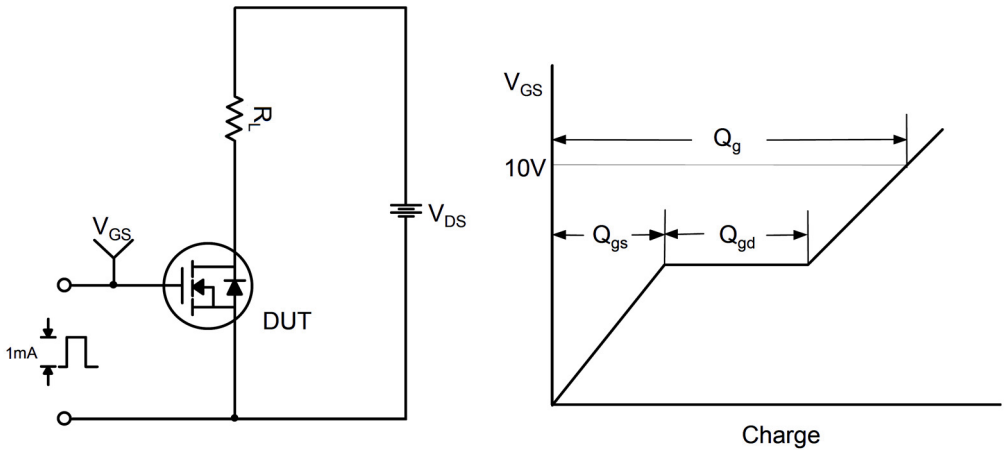


图 13. 栅极电荷测试电路与波形

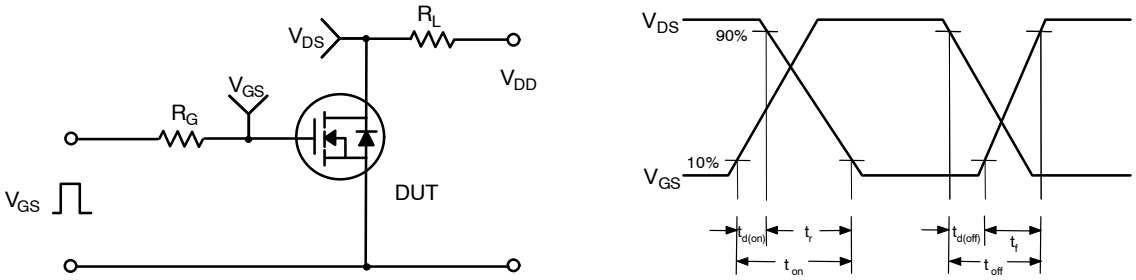


图 14. 阻性开关测试电路与波形

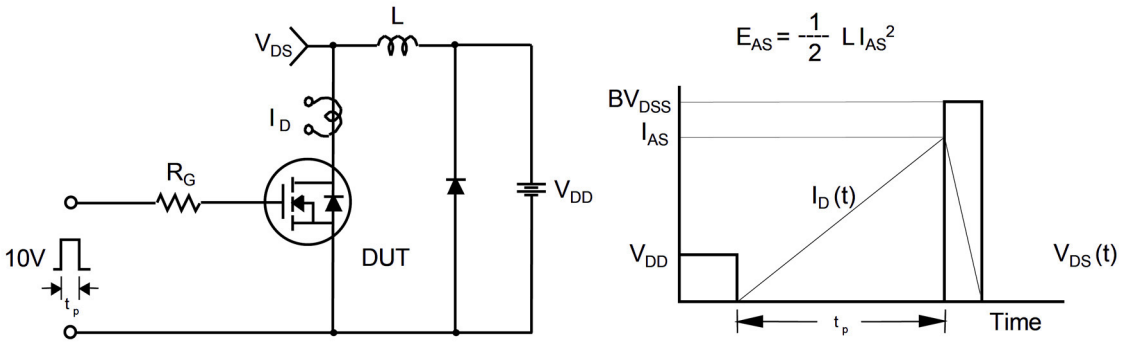


图 15. 非箝位电感开关测试电路与波形

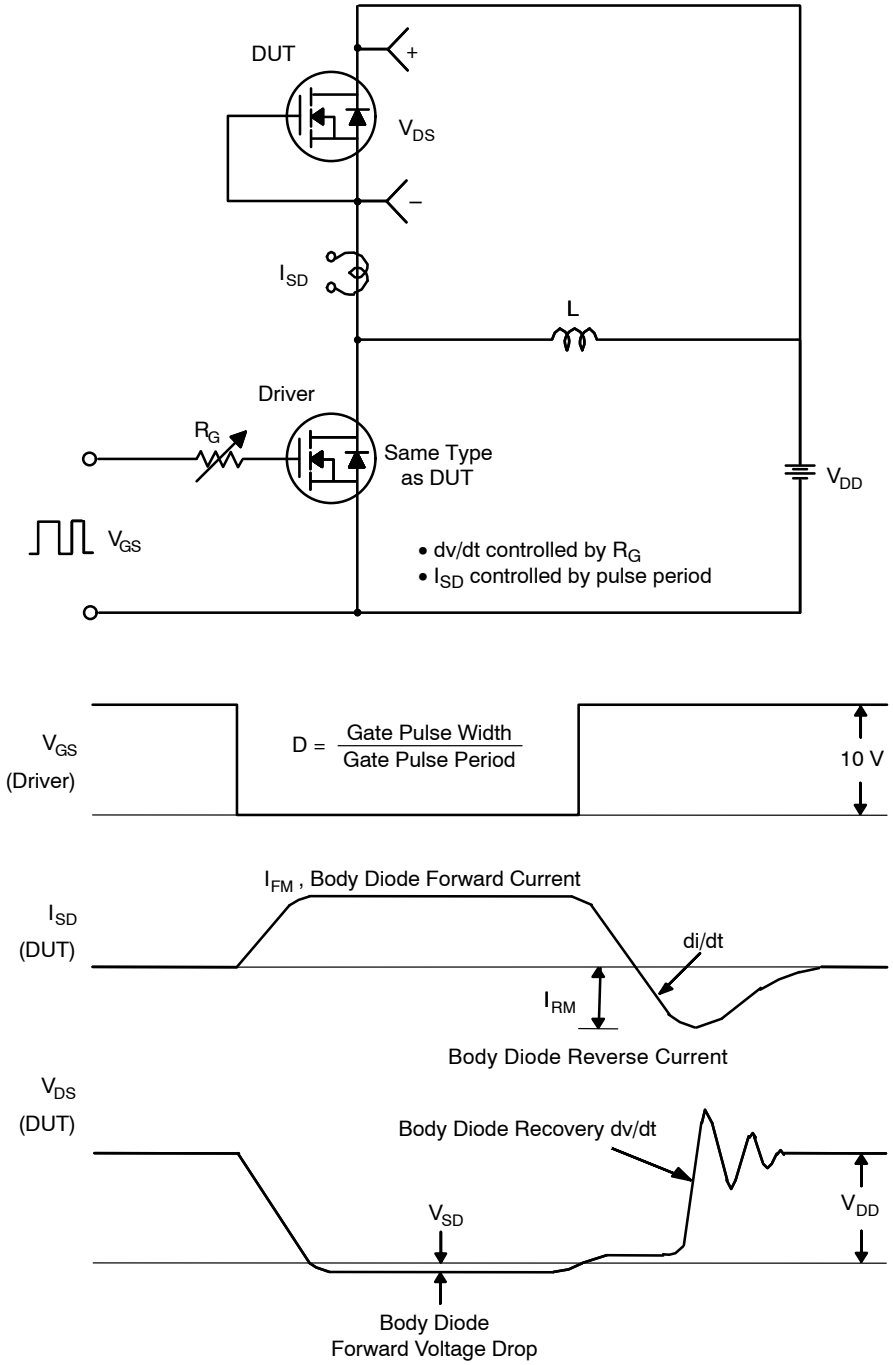


图 16. 二极管恢复 dv/dt 峰值测试电路与波形

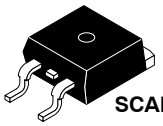
封装标识与定购信息

器件编号	顶标	封装	包装方法†	卷尺寸	带宽	数量
FDB035N10A	FDB035N10A	D^2–PAK	卷带	330 mm	24 mm	800个

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

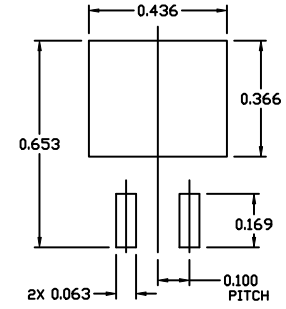
ON Semiconductor®



SCALE 1:1

D²PAK–3 (TO–263, 3–LEAD)
CASE 418AJ
ISSUE F

DATE 11 MAR 2021



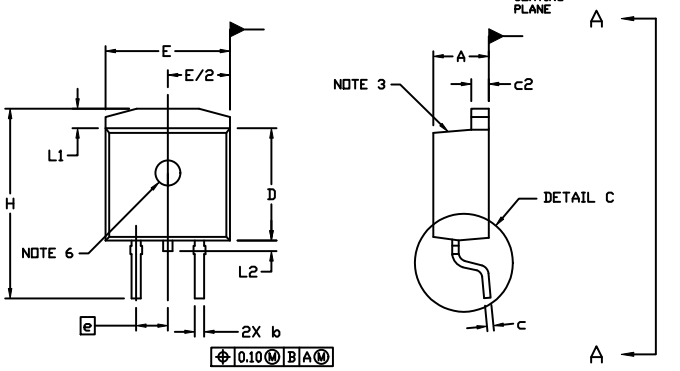
RECOMMENDED
MOUNTING FOOTPRINT

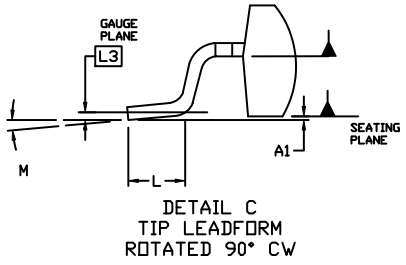
* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

NOTES:

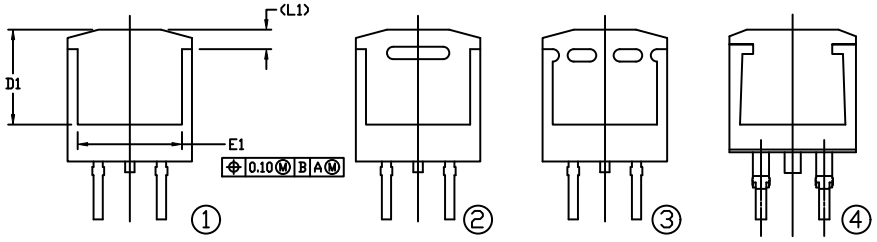
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: INCHES
3. CHAMFER OPTIONAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.005 PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY AT DATUM H.
5. THERMAL PAD CONTOUR IS OPTIONAL WITHIN DIMENSIONS E, L1, D1, AND E1.
6. OPTIONAL MOLD FEATURE.
7. ①, ② ... OPTIONAL CONSTRUCTION FEATURE CALL OUTS.

	INCHES		MILLIMETERS	
DIM	MIN.	MAX.	MIN.	MAX.
A	0.160	0.190	4.06	4.83
A1	0.000	0.010	0.00	0.25
b	0.020	0.039	0.51	0.99
c	0.012	0.029	0.30	0.74
c2	0.045	0.065	1.14	1.65
D	0.330	0.380	8.38	9.65
D1	0.260	---	6.60	---
E	0.380	0.420	9.65	10.67
E1	0.245	---	6.22	---
e	0.100 BSC		2.54 BSC	
H	0.575	0.625	14.60	15.88
L	0.070	0.110	1.78	2.79
L1	---	0.066	---	1.68
L2	---	0.070	---	1.78
L3	0.010 BSC		0.25 BSC	
M	0°	8°	0°	8°





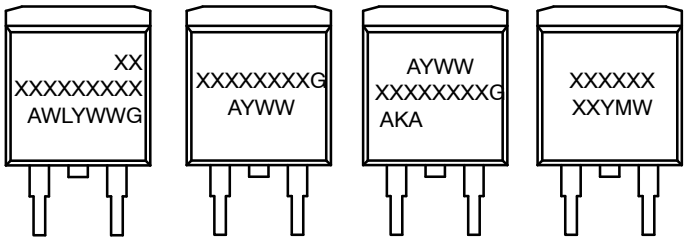
DETAIL C
TIP LEADFORM
ROTATED 90° CW



VIEW A–A

VIEW A–A
OPTIONAL CONSTRUCTIONS

GENERIC MARKING DIAGRAMS*



IC | Standard | Rectifier | SSG

XXXXXX = Specific Device Code
A = Assembly Location
WL = Wafer Lot
Y = Year
WW = Work Week
W = Week Code (SSG)
M = Month Code (SSG)
G = Pb–Free Package
AKA = Polarity Indicator

*This information is generic. Please refer to device data sheet for actual part marking. Pb–Free indicator, “G” or microdot “ ▪”, may or may not be present. Some products may not follow the Generic Marking.

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DESCRIPTION:	**D²PAK–3 (TO–263, 3–LEAD)**	**PAGE 1 OF 1**

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Email Requests to: orderlit@onsemi.com

onsemi Website: www.onsemi.com

TECHNICAL SUPPORT
North American Technical Support:
Voice Mail: 1 800−282−9855 Toll Free USA/Canada
Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:
Phone: 00421 33 790 2910
For additional information, please contact your local Sales Representative

◊