Diode

Rapid Switching Emitter Controlled Diode

IDV08E65D2

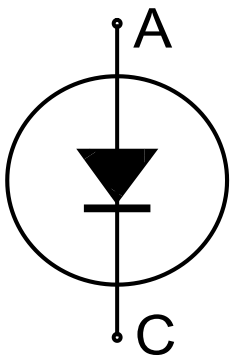
FullPAK with Emitter Controlled Diode

Data sheet

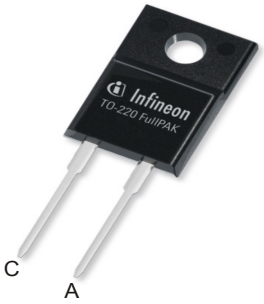
Industrial Power Control

Rapid Switching Emitter Controlled Diode

Features:



- Electrically isolated FullPAK for efficient assembly
- 650 V Emitter Controlled technology
- Fast recovery
- Soft switching
- Low reverse recovery charge
- Low forward voltage
- Qualified according to JESD-022 for target applications
- Pb-free lead plating; RoHS compliant
- Halogen free (according to IEC 61249-2-21)
- Complete product spectrum and PSpice Models: http://www.infineon.com/diode/



Applications:

- Boost diode in CCM PFC

Key Performance and Package Parameters

Type	V_{rrm}	I_f	V_f, T_{vj}=25°C	T_{vjmax}	Marking	Package
IDV08E65D2	650V	8A	1.6V	175°C	E08ED2	PG-TO220-2-22 FP

Table of Contents

Maximum Ratings

For optimum lifetime and reliability, Infineon recommends operating conditions that do not exceed 80% of the maximum ratings stated in this datasheet.

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	650	V
Diode forward current, limited by T_{vjmax} T_C = 25°C T_C = 100°C	I_F	 8.0 4.0	A
Diode pulsed current, t_p limited by T_{vjmax}	I_{Fpuls}	24.0	A
Diode surge non repetitive forward current T_C = 25°C, t_p = 8.3ms, sine halfwave	I_{FSM}	 60.0	A
Power dissipation T_C = 25°C	P_{tot}	27.3	W
Operating junction temperature	T_{vj}	-40...+175	°C
Storage temperature	T_{stg}	-55...+150	°C
Soldering temperature, wave soldering 1.6 mm (0.063 in.) from case for 10s		 260	°C
Mounting torque, M3 screw Maximum of mounting processes: 3	M	0.6	Nm

Thermal Resistance

Parameter	Symbol	Conditions	Max. Value	Unit
Characteristic				
Diode thermal resistance,[1)] junction - case	$R_{th(j-c)}$		5.50	K/W
Thermal resistance junction - ambient	$R_{th(j-a)}$		65	K/W

Electrical Characteristic, at T_{vj} = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Static Characteristic						
Diode forward voltage	V_F	I_F = 8.0A T_{vj} = 25°C T_{vj} = 175°C	 - -	 1.60 1.65	 2.20 -	V
Reverse leakage current	I_R	V_R = 650V T_{vj} = 25°C T_{vj} = 175°C	 - -	 - -	 40.0 2000.0	µA

Electrical Characteristic, at T_{vj} = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Dynamic Characteristic						
Internal emitter inductance measured 5mm (0.197 in.) from case	L_E		-	7.0	-	nH

[1)] Please be aware that in non standard load conditions, due to high Rth(j-c), Tvj close to Tvjmax can be reached.

Switching Characteristic, Inductive Load

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Diode Characteristic, at T_{vj} = 25°C						
Diode reverse recovery time	t_{rr}	T_{vj} = 25°C, V_R = 400V, I_F = 8.0A, di_F/dt = 1000A/µs, $L\sigma$ = 35nH, $C\sigma$ = 32pF, switch IPW60R045CP	-	23	-	ns
Diode reverse recovery charge	Q_{rr}		-	0.11	-	µC
Diode peak reverse recovery current	I_{rrm}		-	7.4	-	A
Diode peak rate of fall of reverse recovery current during t_b	di_{rr}/dt		-	-3300	-	A/µs
Diode reverse recovery time	t_{rr}	T_{vj} = 25°C, V_R = 400V, I_F = 8.0A, di_F/dt = 200A/µs, $L\sigma$ = 35nH, $C\sigma$ = 32pF, switch IPW60R045CP	-	40	-	ns
Diode reverse recovery charge	Q_{rr}		-	0.08	-	µC
Diode peak reverse recovery current	I_{rrm}		-	2.5	-	A
Diode peak rate of fall of reverse recovery current during t_b	di_{rr}/dt		-	-1300	-	A/µs

Switching Characteristic, Inductive Load

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Diode Characteristic, at T_{vj} = 175°C/125°C						
Diode reverse recovery time	t_{rr}	T_{vj} = 175°C, V_R = 400V, I_F = 8.0A, di_F/dt = 1000A/µs, $L\sigma$ = 35nH, $C\sigma$ = 32pF, switch IPW60R045CP	-	30	-	ns
Diode reverse recovery charge	Q_{rr}		-	0.20	-	µC
Diode peak reverse recovery current	I_{rrm}		-	10.0	-	A
Diode peak rate of fall of reverse recovery current during t_b	di_{rr}/dt		-	-2200	-	A/µs
Diode reverse recovery time	t_{rr}	T_{vj} = 125°C, V_R = 400V, I_F = 8.0A, di_F/dt = 200A/µs, $L\sigma$ = 35nH, $C\sigma$ = 32pF, switch IPW60R045CP	-	58	-	ns
Diode reverse recovery charge	Q_{rr}		-	0.13	-	µC
Diode peak reverse recovery current	I_{rrm}		-	3.8	-	A
Diode peak rate of fall of reverse recovery current during t_b	di_{rr}/dt		-	-2200	-	A/µs

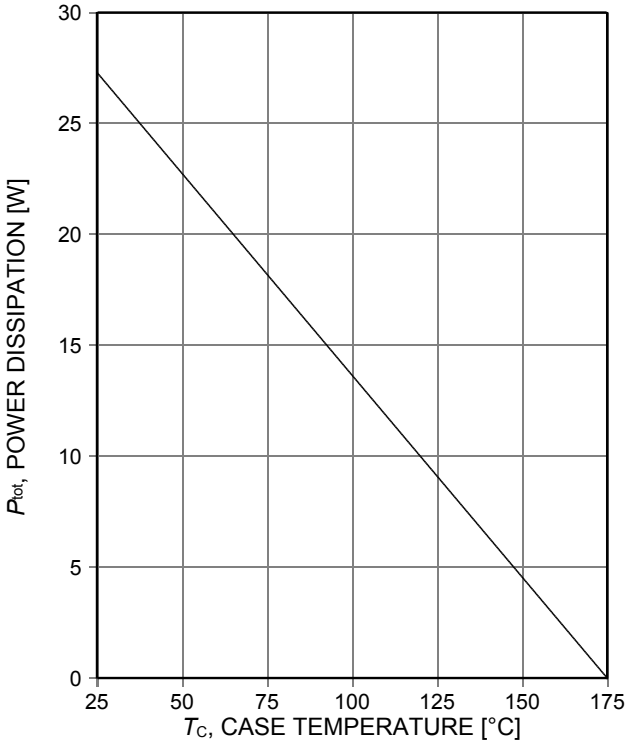


Figure 1. **Power dissipation as a function of case temperature**
(T_{vj}≤175°C)

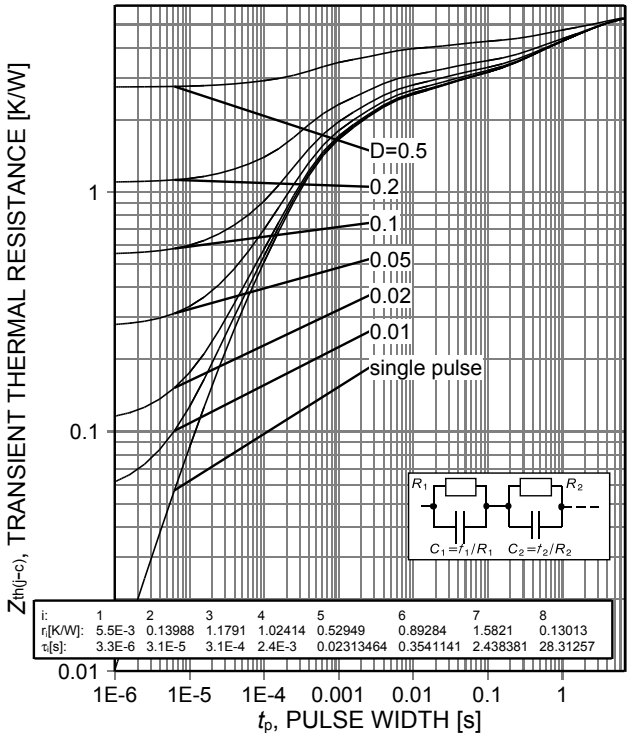


Figure 2. **Diode transient thermal impedance as a function of pulse width**
($D=t_p/T$)

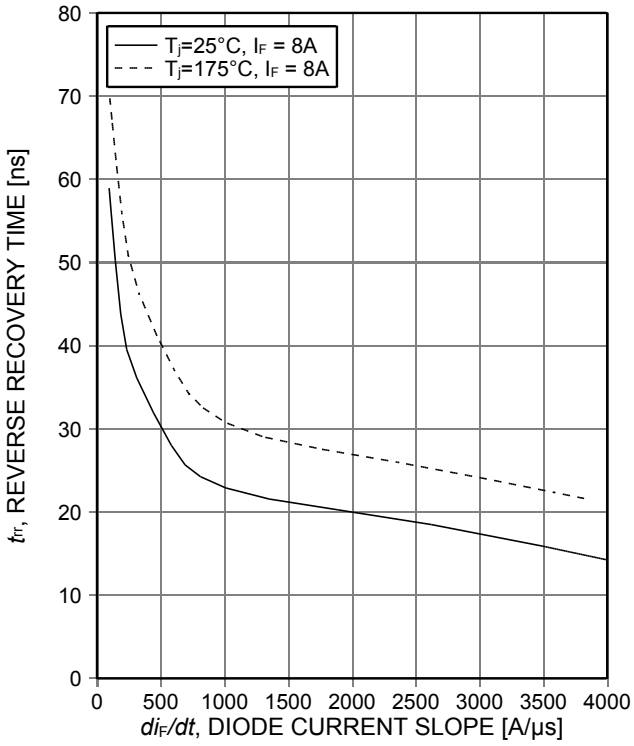


Figure 3. **Typical reverse recovery time as a function of diode current slope**
(V_R=400V)

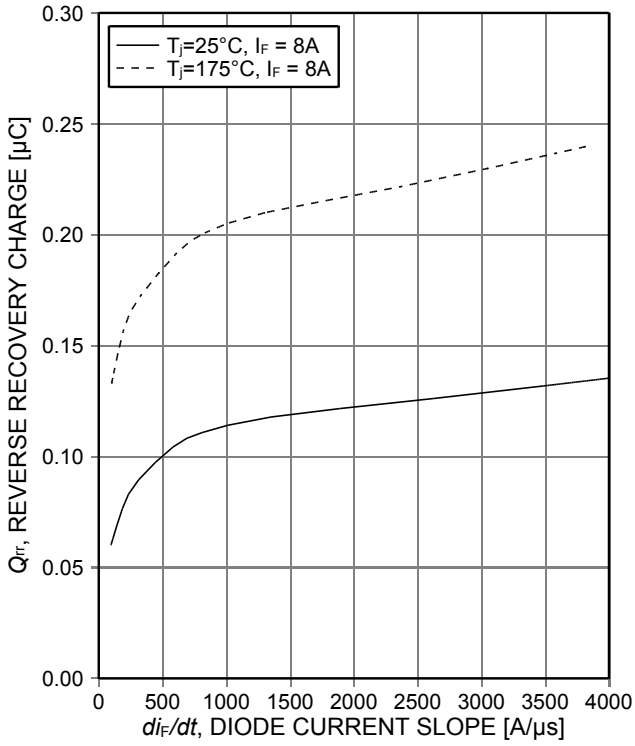


Figure 4. **Typical reverse recovery charge as a function of diode current slope**
(V_R=400V)

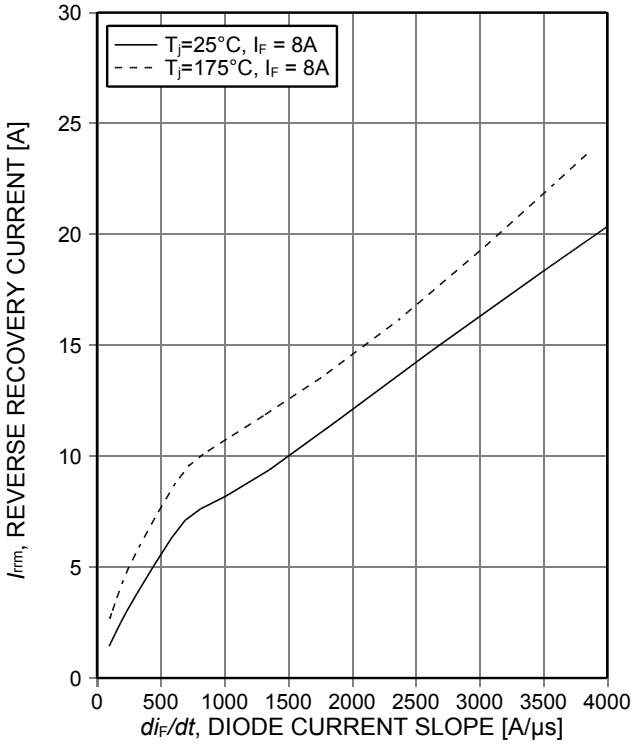


Figure 5. **Typical peak reverse recovery current as a function of diode current slope**
(V_R=400V)

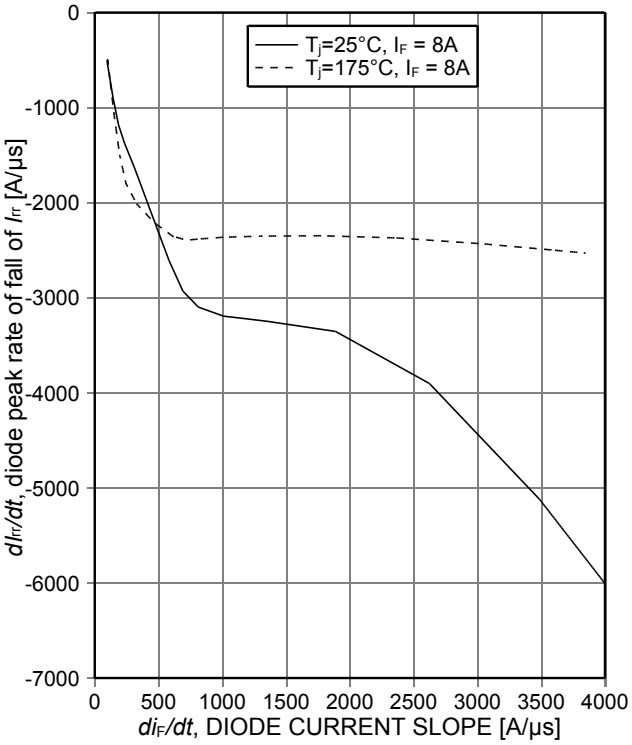


Figure 6. **Typical diode peak rate of fall of reverse recovery current as a function of diode current slope**
(V_R=400V)

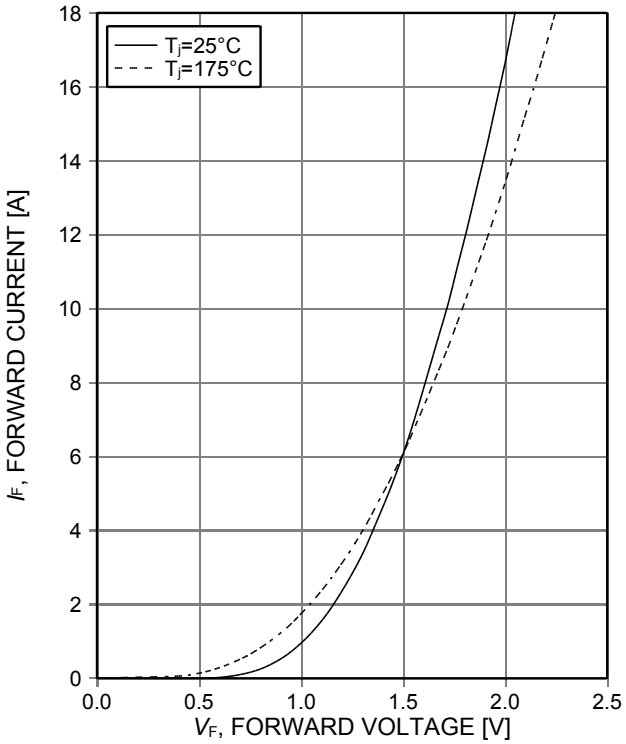


Figure 7. **Typical diode forward current as a function of forward voltage**

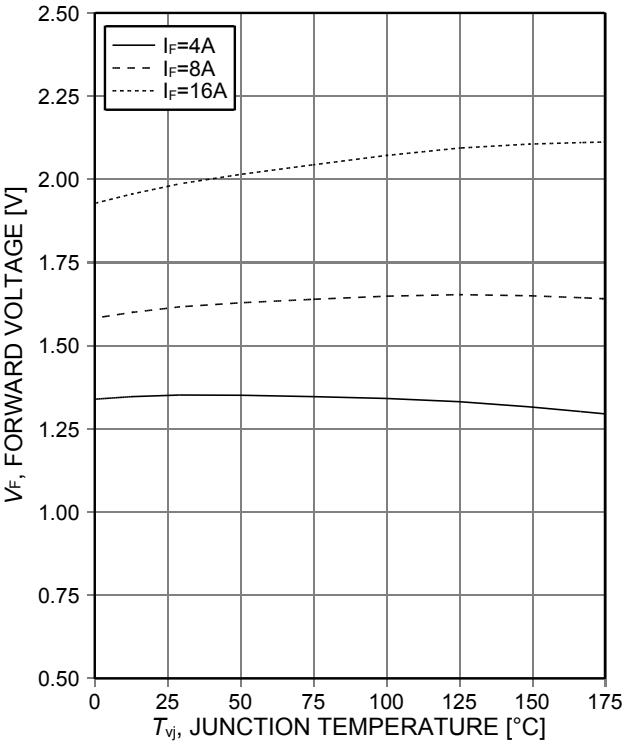
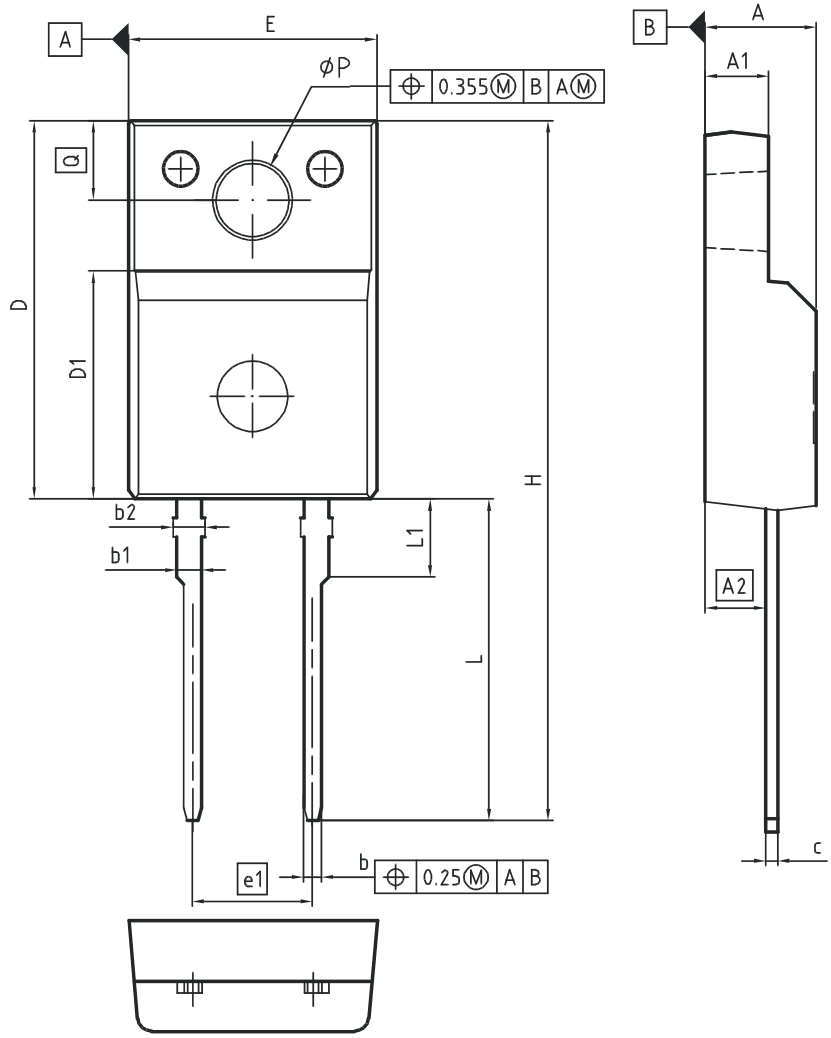


Figure 8. **Typical diode forward voltage as a function of junction temperature**

PG-TO220-2-22



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.55	4.85	0.179	0.191
A1	2.55	2.85	0.100	0.112
A2	2.42	2.72	0.095	0.107
b	0.65	0.85	0.026	0.033
b1	0.95	1.15	0.037	0.045
b2	0.95	1.35	0.037	0.053
c	0.40	0.60	0.016	0.024
D	15.85	16.15	0.624	0.636
D1	9.53	9.83	0.375	0.387
E	10.35	10.65	0.407	0.419
e1	5.08		0.200	
N	2		2	
H	29.30	29.90	1.154	1.177
L	13.45	13.75	0.530	0.541
L1	3.15	3.45	0.124	0.136
øP	3.00	3.20	0.118	0.126
Q	3.20	3.50	0.126	0.138

DOCUMENT NO.
Z8B00155551

SCALE 0 2.5 0 2.5 5mm

EUROPEAN PROJECTION

ISSUE DATE
21-12-2009

REVISION
01

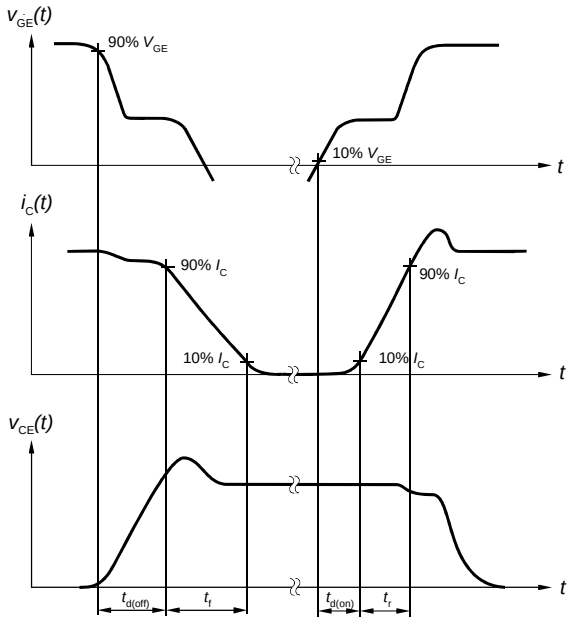


Figure A. Definition of switching times

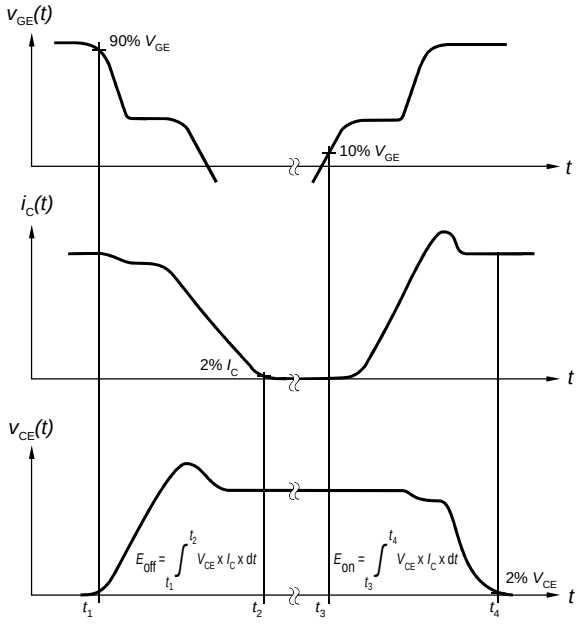


Figure B. Definition of switching losses

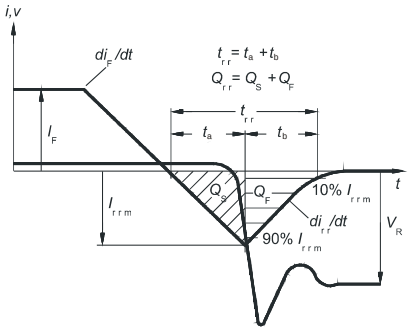


Figure C. Definition of diodes switching characteristics

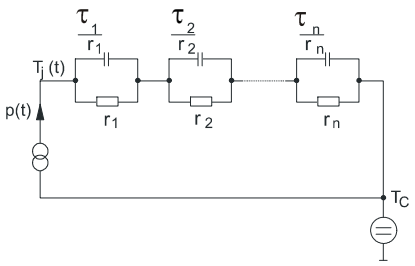


Figure D. Thermal equivalent circuit

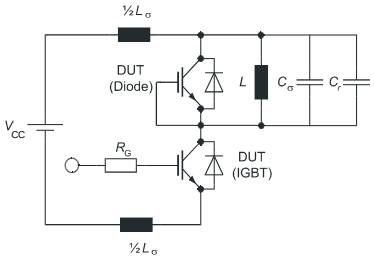


Figure E. Dynamic test circuit
Parasitic inductance L_σ,
Parasitic capacitor C_σ,
Relief capacitor C_r,
(only for ZVT switching)

Revision History

IDV08E65D2

Revision: 2014-08-28, Rev. 2.2

Previous Revision

Revision	Date	Subjects (major changes since last revision)
1.1	2013-03-13	Preliminary data sheet
2.1	2013-12-16	Final DS / New Marking Pattern
2.2	2014-08-28	Value VFmax limit according BE test

We Listen to Your Comments
Any information within this document that you feel is wrong, unclear or missing at all ?
Your feedback will help us to continuously improve the quality of this document.
Please send your proposal (including a reference to this document) to: erratum@infineon.com

Published by
Infineon Technologies AG
81726 Munich, Germany
81726 München, Germany

Legal Disclaimer
The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

Information
For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office (www.infineon.com).

Warnings
Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.
The Infineon Technologies component described in this Data Sheet may be used in life-support devices or systems and/or automotive, aviation and aerospace applications or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support, automotive, aviation and aerospace device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru

www.lifeelectronics.ru