WESTCODE

An IXYS Company

Date:- 14 Dec, 2005

Data Sheet Issue:- 1

Provisional Data

Insulated Gate Bi-Polar Transistor

Type T0800TA45E

Advance Data

Absolute Maximum Ratings

	VOLTAGE RATINGS	MAXIMUM LIMITS	UNITS
V_{CES}	Collector – emitter voltage	4500	V
$V_{DC\ link}$	Permanent DC voltage for 100 FIT failure rate	2800	V
V_{GES}	Peak gate – emitter voltage	±20	V

	RATINGS	MAXIMUM LIMITS	UNITS
$I_{C(DC)}$	Continuous DC collector current, IGBT (Note 4)	1267	A
I_{CRM}	Repetitive peak collector current, t_p=500µs, IGBT	1400	A
I_{ECO}	Maximum reverse emitter current, t_p=1ms, (note 2 & 3)	710	A
P_{MAX}	Maximum power dissipation, IGBT (note 4)	8.3	kW
$T_{j\ op}$	Operating temperature range	-40 to +125	°C
T_{stg}	Storage temperature range	-40 to +125	°C

Notes: -
1) Unless otherwise indicated T_j = 125°C
2) T_{sink} = 55°C, double side cooled
3) The Use of an anti-parallel diode is recommended
4) T_{sink} = 25°C, double side cooled

Downloaded from Elcodis.com electronic components distributor

Characteristics

	PARAMETER	MIN	TYP	MAX	TEST CONDITIONS	UNITS
$V_{CE(sat)}$	Collector – emitter saturation voltage	-	3.6	3.9	I_C =800A, V_{GE} = 15V, T_j = 25°C	V
		-	4.7	5.0	I_C = 800A, V_{GE} = 15V	V
V_{T0}	Threshold voltage	-	-	2.32	Current range: 800 – 2400A	V
r_T	Slope resistance	-	-	3.36		mΩ
$V_{GE(TH)}$	Gate threshold voltage	4.6	5.6	6.6	V_{CE} = V_{GE}, I_C = 200mA	V
I_{CES}	Collector – emitter cut-off current	-	10	25	V_{CE} = V_{CES}, V_{GE} = 0V	mA
I_{GES}	Gate leakage current	-	-	±200	V_{GE} = ±20V	µA
C_{ies}	Input capacitance	-	140	-	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz	nF
$t_{d(on)}$	Turn-on delay time	-	1.4	-	I_C =800A, V_{CE} = 0.5V_{CES}, V_{GE} = ±20V, $R_{g(ON)}$= 5.6Ω, $R_{g(OFF)}$=4.7Ω,	µs
$t_r(I)$	Rise time	-	1.9	-		µs
$Q_{g(on)}$	Turn-on gate charge	-	-	60		µC
E_{on}	Turn-on energy	-	2.7	-		J
$t_{d(off)}$	Turn-off delay time	-	1.1	-		µs
t_f	Fall time	-	2.9	-		µs
$Q_{g(off)}$	Turn-off gate charge	-	-	70		µC
E_{off}	Turn-off energy	-	2.2	-		J

Thermal Characteristics

	PARAMETER	MIN	TYP	MAX	TEST CONDITIONS	UNITS
R_{thJK}	Thermal resistance junction to sink, IGBT	-	-	12	Double side cooled	K/kW
		-	-	18	Collector side cooled	K/kW
		-	-	35	Emitter side cooled	K/kW
F	Mounting force	15	20	25	Note 2	kN
W_t	Weight	-	1.2	-		kg

Notes:-
1) Unless otherwise indicated T_j=125°C
2) For other clamp forces, please consult factory

Advance Data

Downloaded from Elcodis.com electronic components distributor

Curves

Figure 1 – Typical collector-emitter saturation voltage characteristics

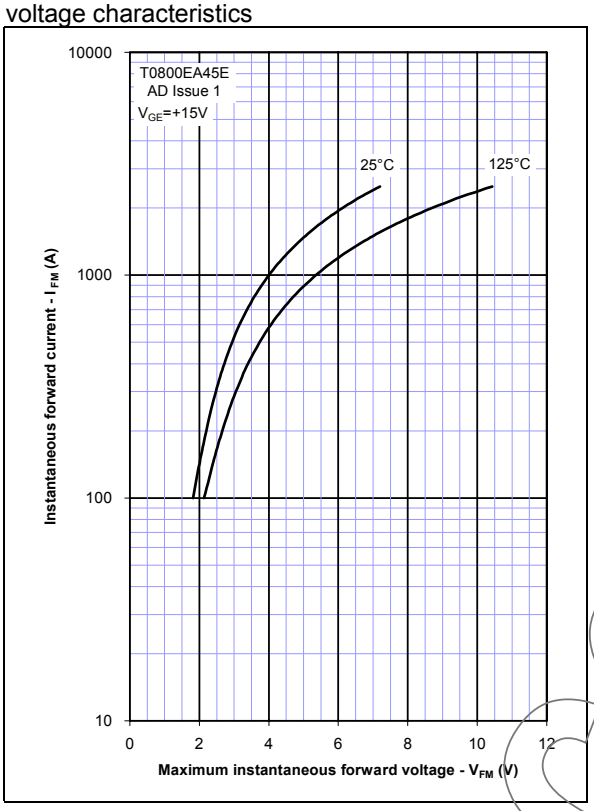


Figure 2 – Typical output characteristic

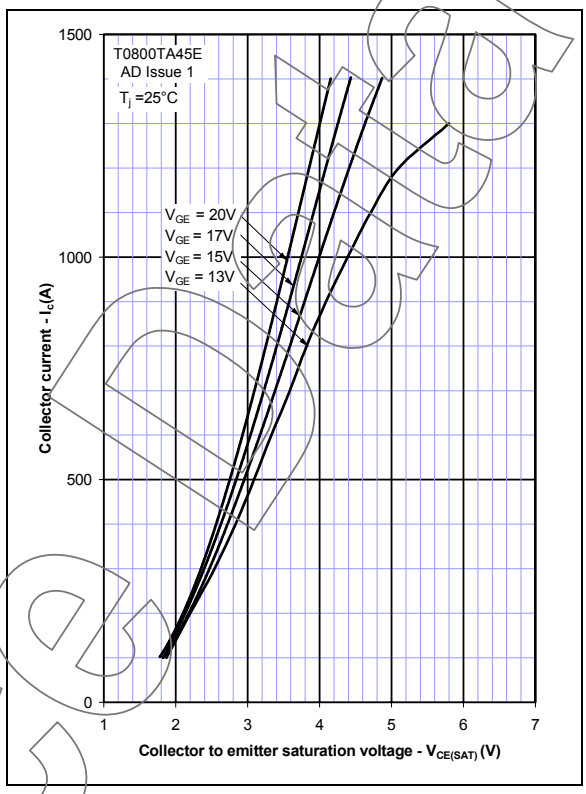


Figure 3 – Typical output characteristic

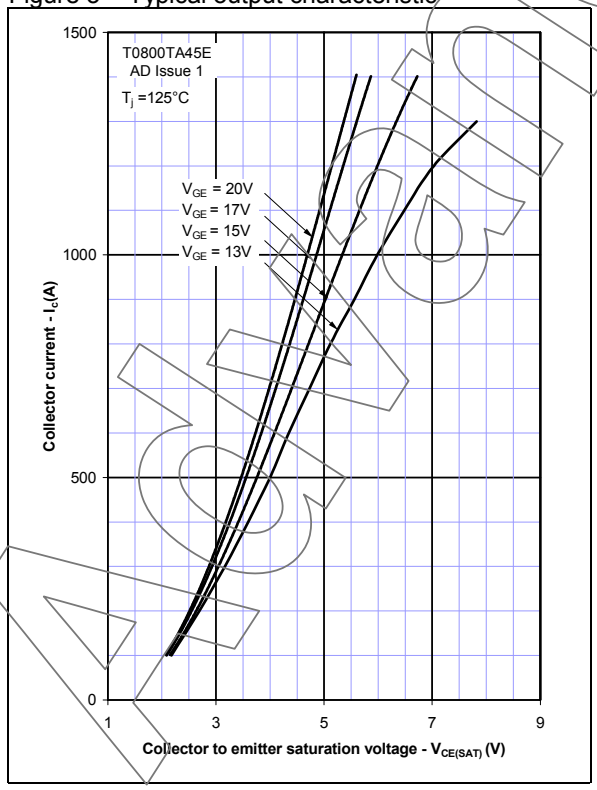
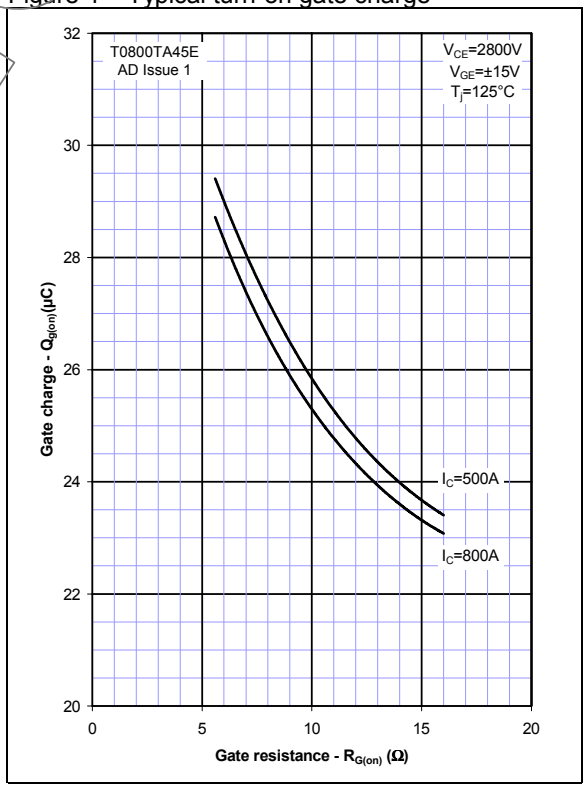


Figure 4 – Typical turn-on gate charge



Downloaded from Elcodis.com electronic components distributor

Figure 5 – Typical turn-off gate charge

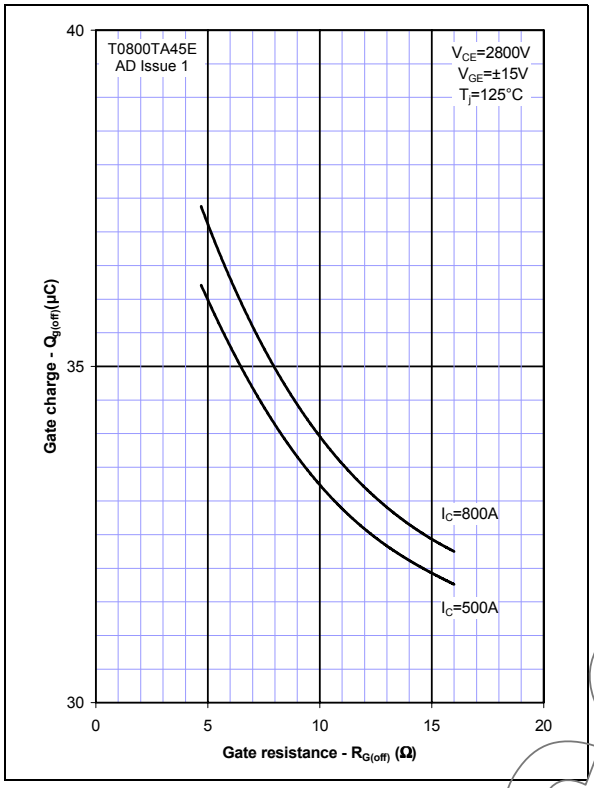


Figure 6 – Typical turn-on delay time vs gate resistance

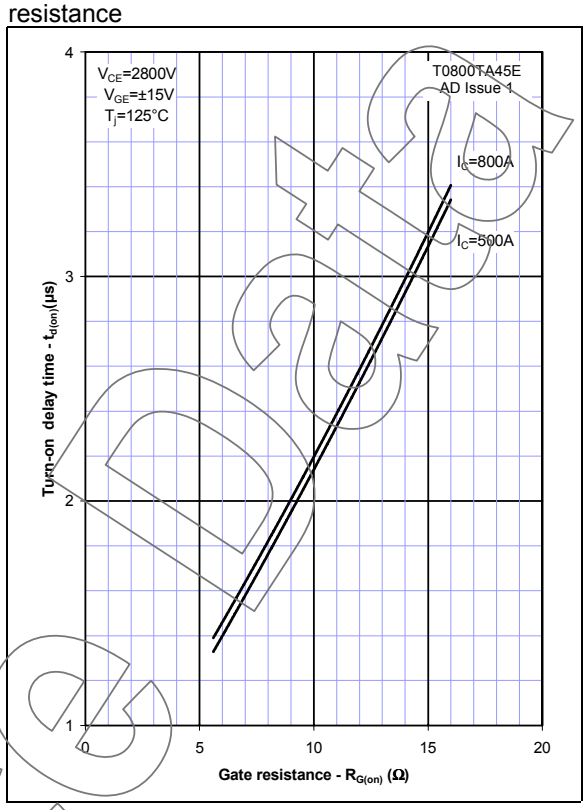


Figure 7 – Typical turn-off delay time vs. gate resistance

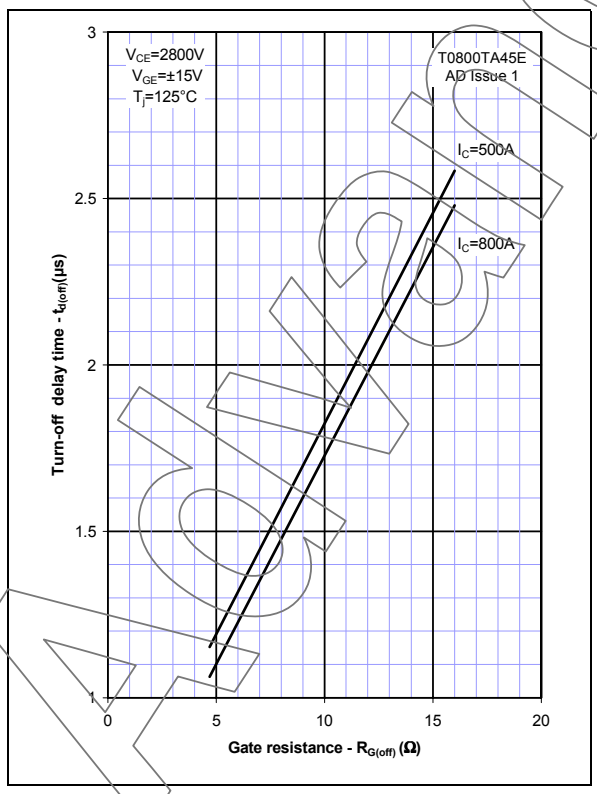
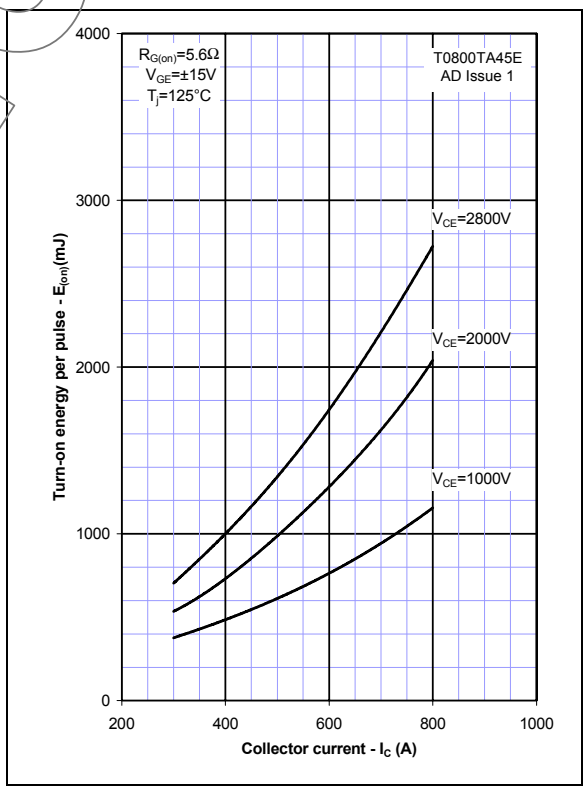


Figure 8 – Typical turn-on energy vs. collector current



Advance Data Sheet

Downloaded from Elcodis.com electronic components distributor

Figure 9 – Typical turn-on energy vs. di/dt

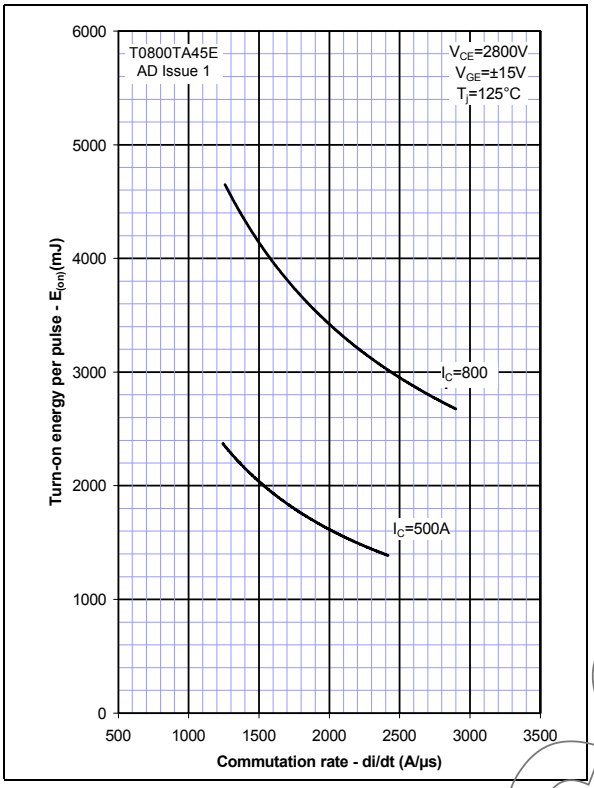


Figure 10 – Typical turn-off energy vs. collector current

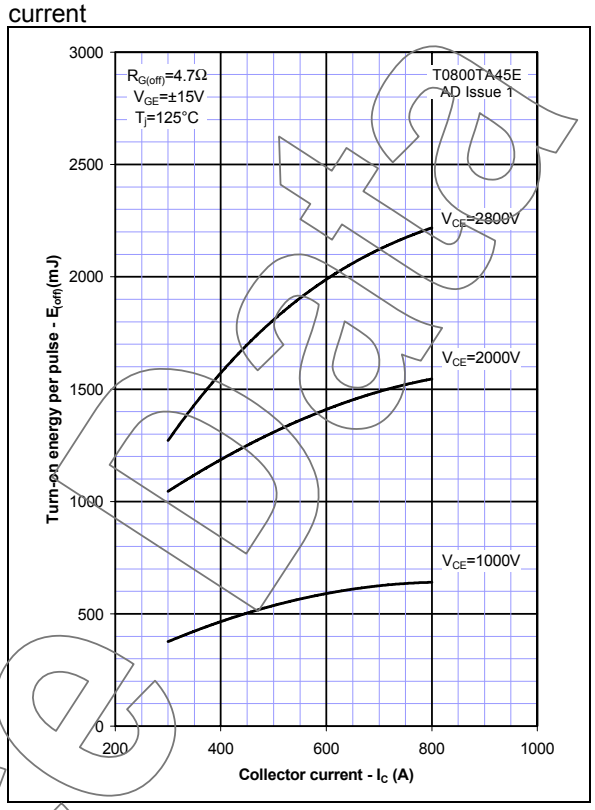


Figure 11 – Turn-off energy vs voltage

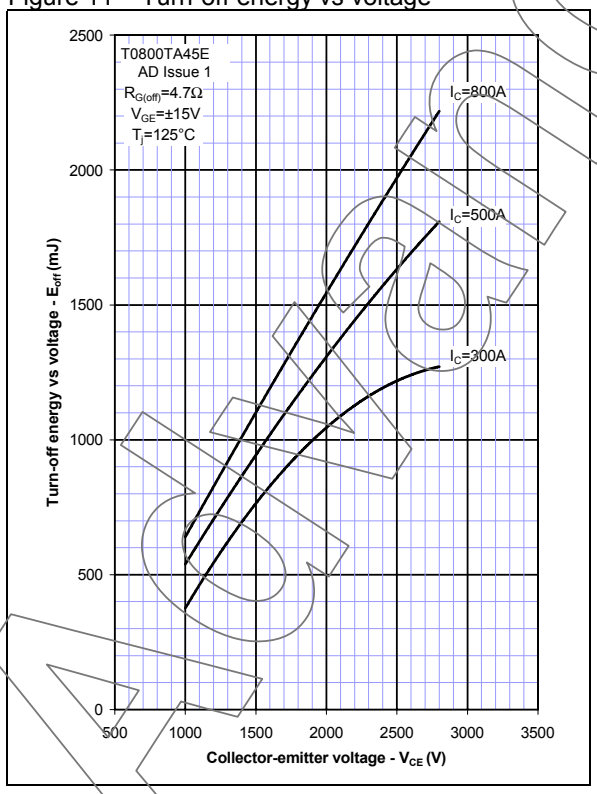
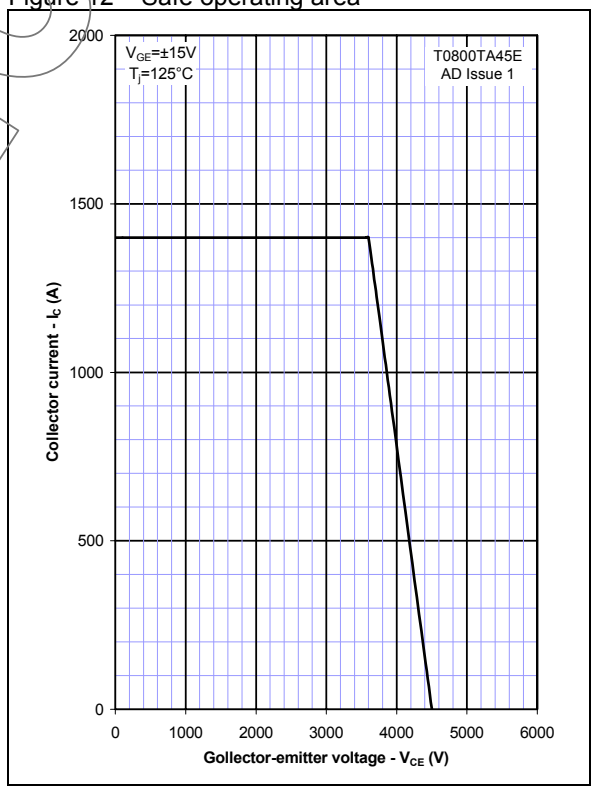


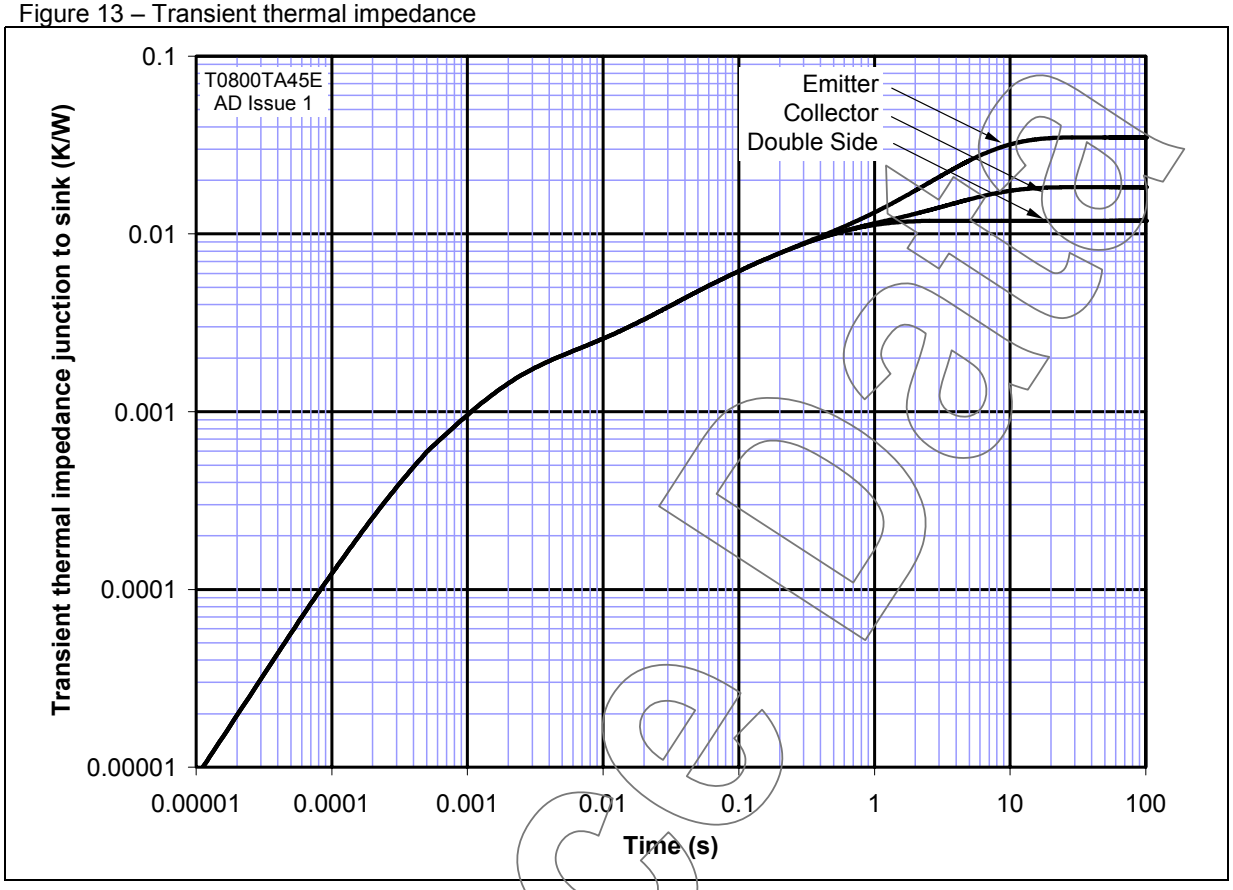
Figure 12 – Safe operating area



Advance Data Sheet

Downloaded from Elcodis.com electronic components distributor

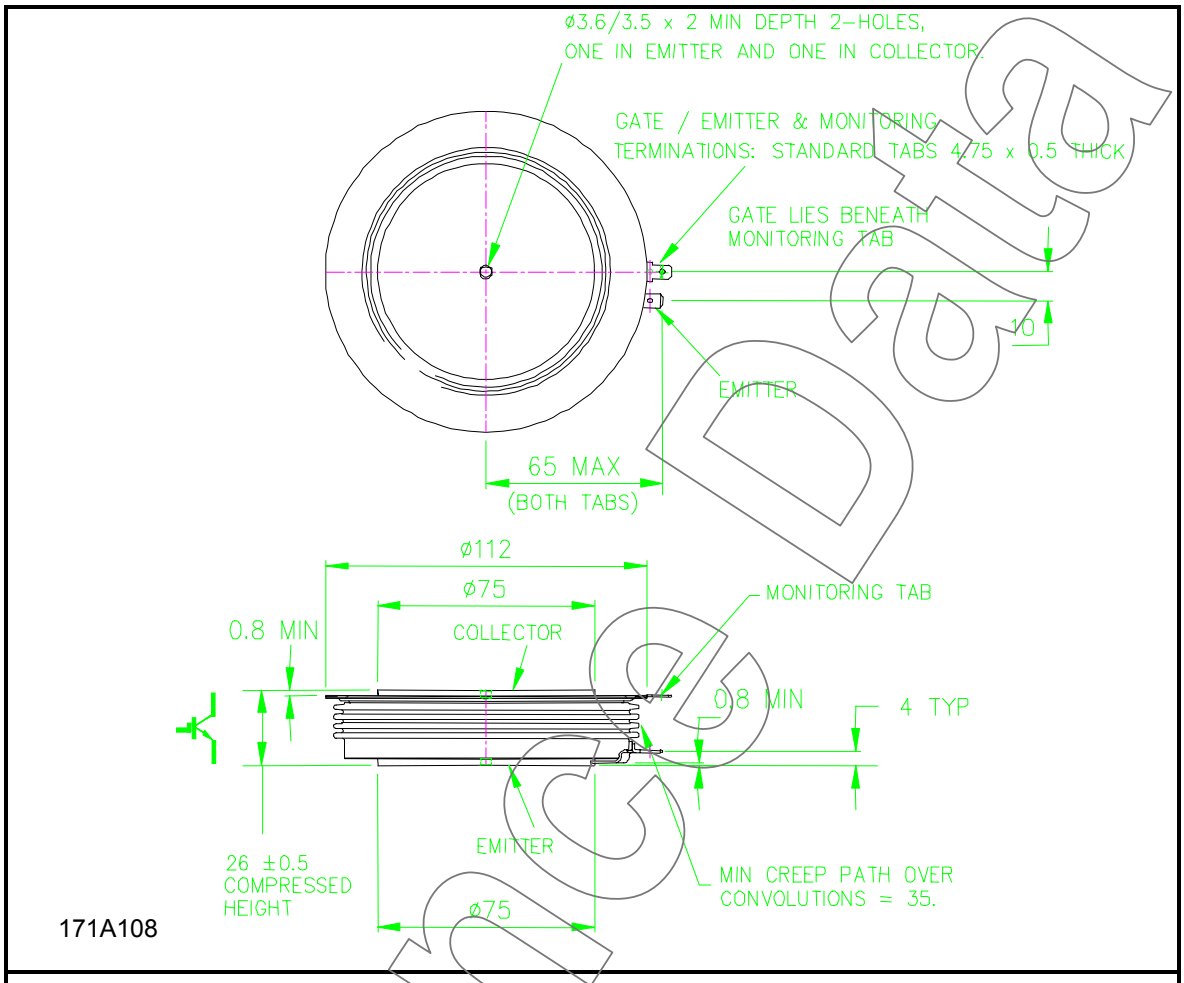
Figure 13 – Transient thermal impedance



Advance Data

Downloaded from Elcodis.com electronic components distributor

Outline Drawing & Ordering Information



ORDERING INFORMATION (Please quote 10 digit code as below)

T0800	TA	45	E
Fixed type Code	Fixed Outline Code	Voltage Grade 4500	Fixed format code

Typical order code: T0800TA45E (V_{CES} = 4500V)

IXYS Semiconductor GmbH
Edisonstraße 15
D-68623 Lampertheim
Tel: +49 6206 503-0
Fax: +49 6206 503-627
E-mail: marcom@ixys.de

IXYS Corporation
3540 Bassett Street
Santa Clara CA 95054 USA
Tel: +1 (408) 982 0700
Fax: +1 (408) 496 0670
E-mail: sales@ixys.net

WESTCODE
An IXYS Company

www.westcode.com

www.ixys.com

Westcode Semiconductors Ltd
Langley Park Way, Langley Park,
Chippenham, Wiltshire, SN15 1GE.
Tel: +44 (0)1249 444524
Fax: +44 (0)1249 659448
E-mail: WSL.sales@westcode.com

Westcode Semiconductors Inc
3270 Cherry Avenue
Long Beach CA 90807 USA
Tel: +1 (562) 595 6971
Fax: +1 (562) 595 8182
E-mail: WSI.sales@westcode.com

The information contained herein is confidential and is protected by Copyright. The information may not be used or disclosed except with the written permission of and in the manner permitted by the proprietors Westcode Semiconductors Ltd.

© Westcode Semiconductors Ltd.

In the interest of product improvement, Westcode reserves the right to change specifications at any time without prior notice.

Devices with a suffix code (2-letter or letter/digit/letter combination) added to their generic code are not necessarily subject to the conditions and limits contained in this report.

Preliminary Data

Downloaded from Elcodis.com electronic components distributor