

IMPORTANT NOTICE

10 December 2015

1. Global joint venture starts operations as WeEn Semiconductors

Dear customer,

As from November 9th, 2015 NXP Semiconductors N.V. and Beijing JianGuang Asset Management Co. Ltd established Bipolar Power joint venture (JV), **WeEn Semiconductors**, which will be used in future Bipolar Power documents together with new contact details.

In this document where the previous NXP references remain, please use the new links as shown below.

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If you have any questions related to this document, please contact our nearest sales office via e-mail or phone (details via salesaddresses@ween-semi.com).

Thank you for your cooperation and understanding,

WeEn Semiconductors

DATA SHEET

BT258U series

Thyristors
logic level

Product specification

March 1999



Thyristors

logic level

BT258U series

GENERAL DESCRIPTION

Passivated, sensitive gate thyristors in a plastic envelope, intended for use in general purpose switching and phase control applications. These devices are intended to be interfaced directly to microcontrollers, logic integrated circuits and other low power gate trigger circuits.

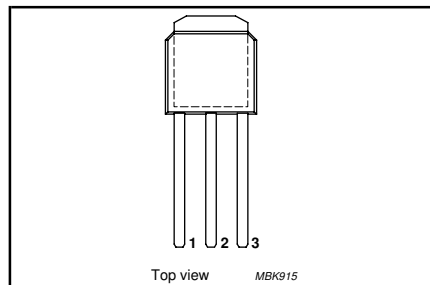
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{DRM} , V_{RRM}	BT258U- Repetitive peak off-state voltages	500R 500	600R 600	800R 800	V
$I_{T(AV)}$	Average on-state current	5	5	5	A
$I_{T(RMS)}$	RMS on-state current	8	8	8	A
I_{TSM}	Non-repetitive peak on-state current	75	75	75	A

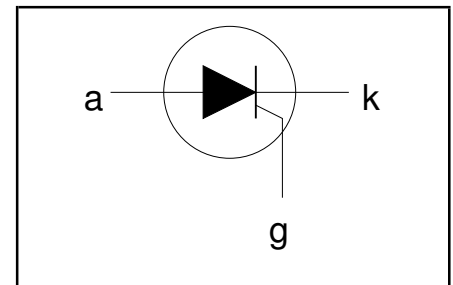
PINNING - SOT533

PIN NUMBER	DESCRIPTION
1	cathode
2	anode
3	gate
tab	anode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{DRM} , V_{RRM}	Repetitive peak off-state voltages		-	-500R 500 ¹	-600R 600 ¹	-800R 800	V
$I_{T(AV)}$	Average on-state current	half sine wave; $T_{mb} \leq 111\text{ °C}$	-	5			A
$I_{T(RMS)}$	RMS on-state current	all conduction angles	-	8			A
I_{TSM}	Non-repetitive peak on-state current	half sine wave; $T_j = 25\text{ °C}$ prior to surge	-	75			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	82			A
di_T/dt	Repetitive rate of rise of on-state current after triggering	$t = 8.3\text{ ms}$	-	28			A ² s
I_{GM}	Peak gate current	$t = 10\text{ ms}$	-	50			A/μs
V_{GM}	Peak gate voltage	$I_{TM} = 10\text{ A}$; $I_G = 50\text{ mA}$;	-	2			A
V_{RGM}	Peak reverse gate voltage	$di_G/dt = 50\text{ mA/μs}$	-	5			V
P_{GM}	Peak gate power		-	5			W
$P_{G(AV)}$	Average gate power	over any 20 ms period	-	0.5			W
T_{stg}	Storage temperature		-40	150			°C
T_j	Operating junction temperature		-	125 ²			°C

1 Although not recommended, off-state voltages up to 800V may be applied without damage, but the thyristor may switch to the on-state. The rate of rise of current should not exceed 15 A/μs.

2 Note: Operation above 110°C may require the use of a gate to cathode resistor of 1kΩ or less.

Thyristors logic level

BT258U series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	70	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{GT}	Gate trigger current	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$	-	50	200	μA
I_L	Latching current	$V_D = 12\text{ V}$; $I_{GT} = 0.1\text{ A}$	-	0.4	10	mA
I_H	Holding current	$V_D = 12\text{ V}$; $I_{GT} = 0.1\text{ A}$	-	0.3	6	mA
V_T	On-state voltage	$I_T = 16\text{ A}$	-	1.3	1.5	V
V_{GT}	Gate trigger voltage	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$	-	0.4	1.5	V
I_D, I_R	Off-state leakage current	$V_D = V_{DRM(max)}$; $I_T = 0.1\text{ A}$; $T_j = 110\text{ °C}$	0.1	0.2	-	V
		$V_D = V_{DRM(max)}$; $V_R = V_{RRM(max)}$; $T_j = 125\text{ °C}$	-	0.1	0.5	mA

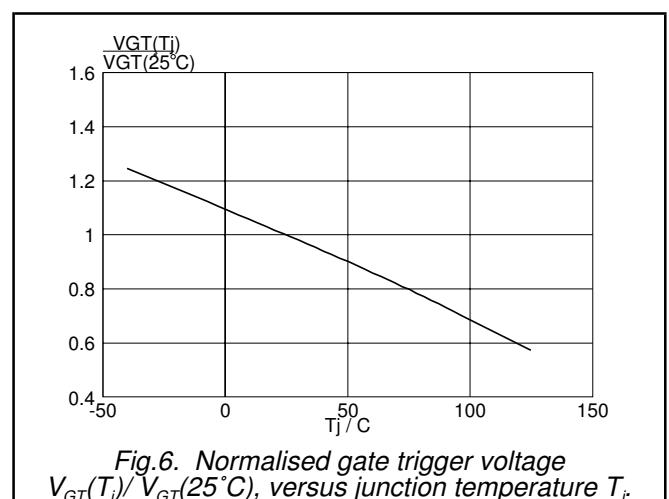
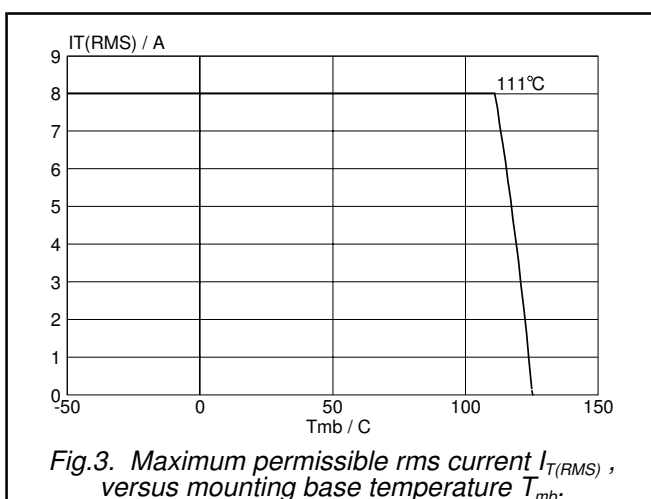
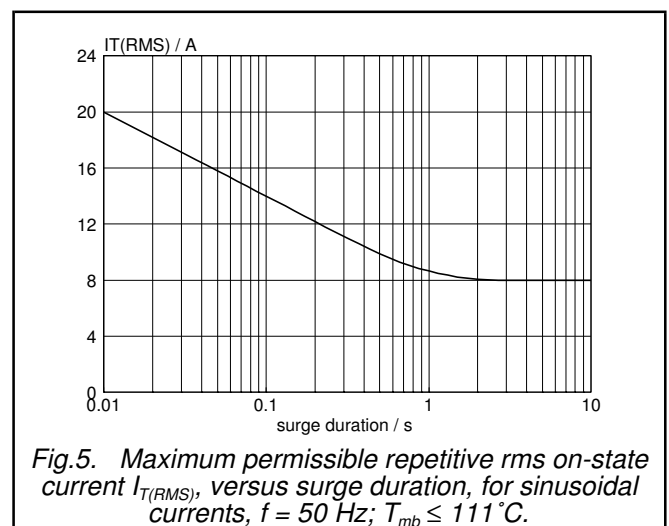
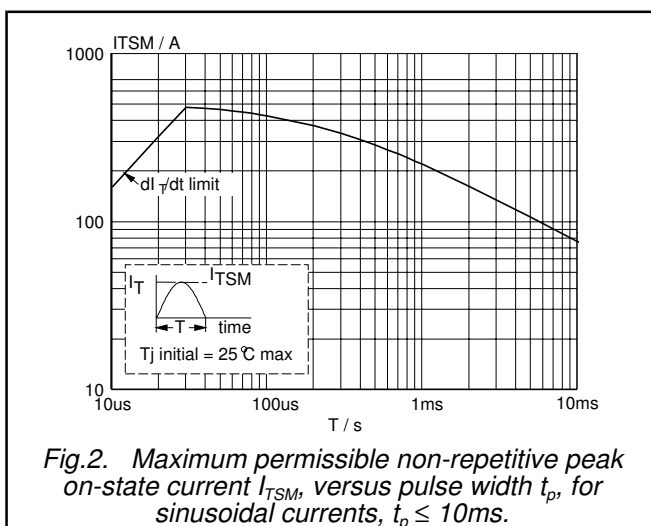
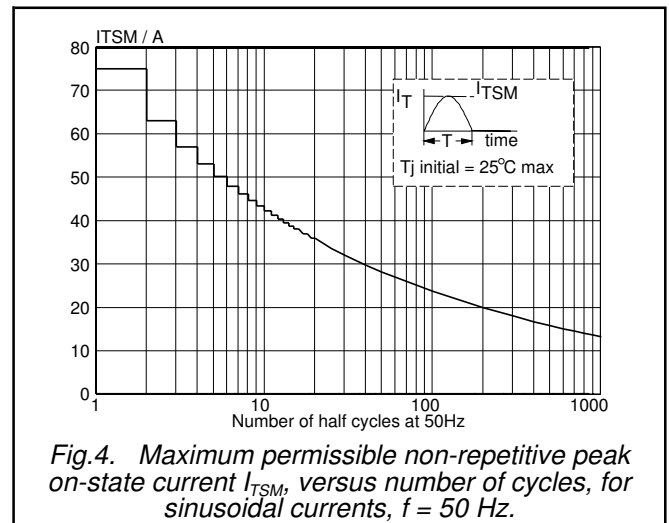
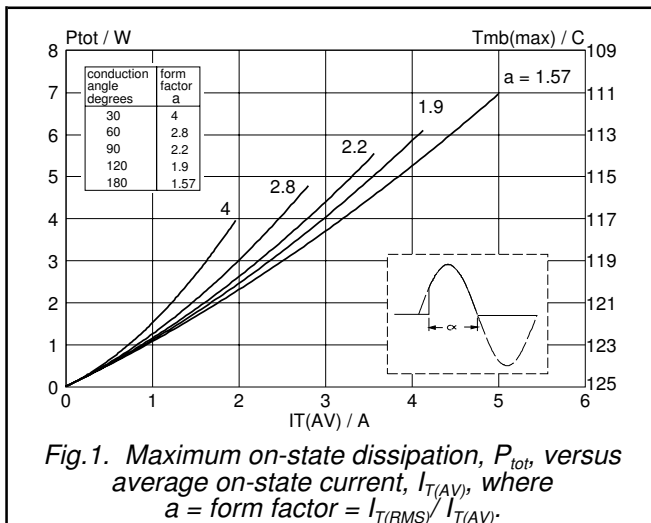
DYNAMIC CHARACTERISTICS

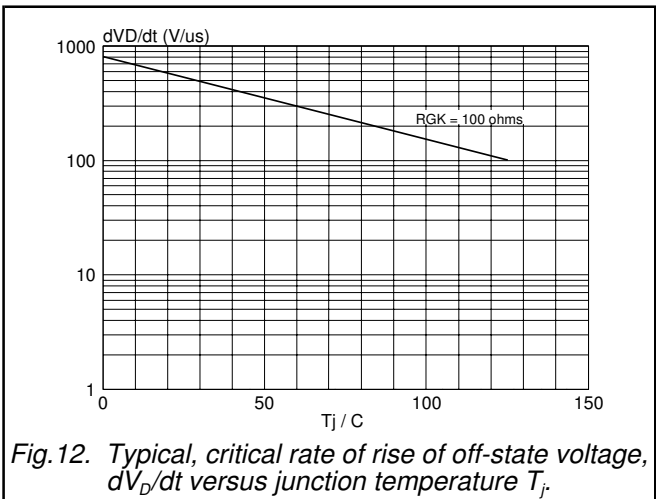
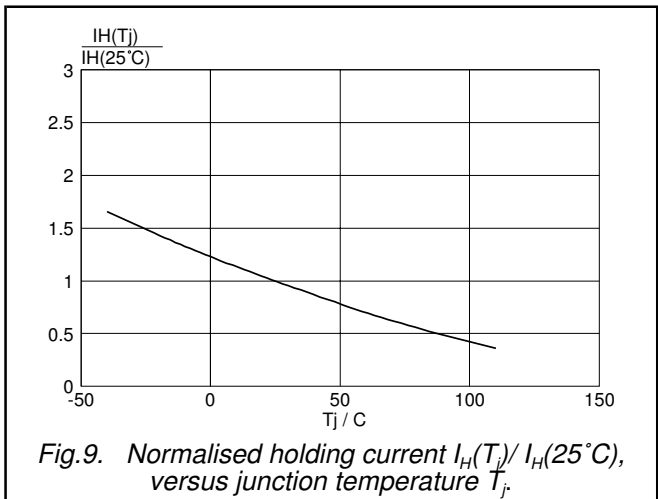
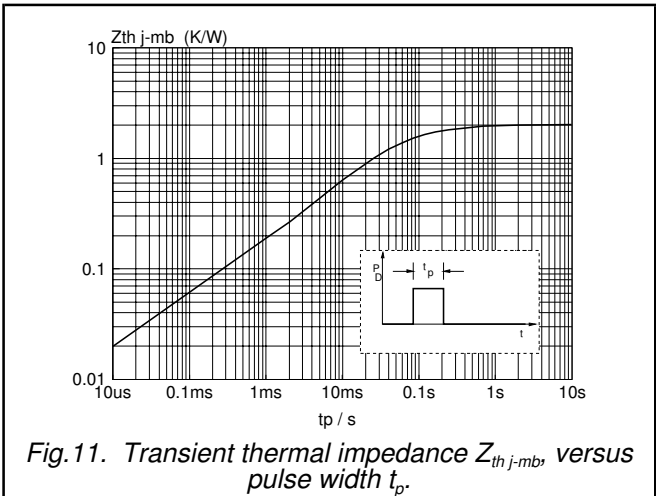
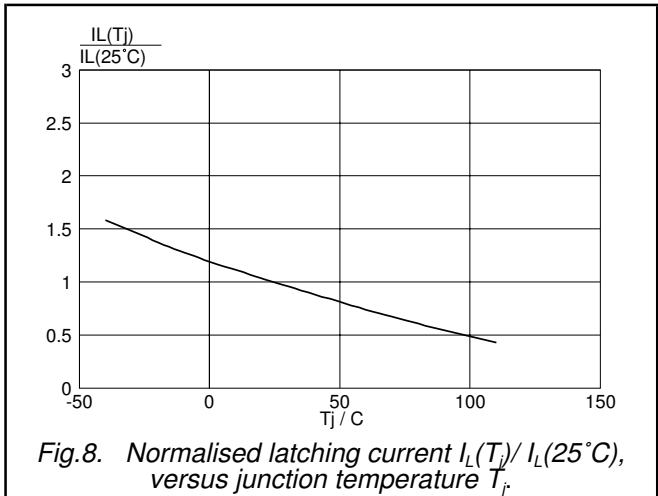
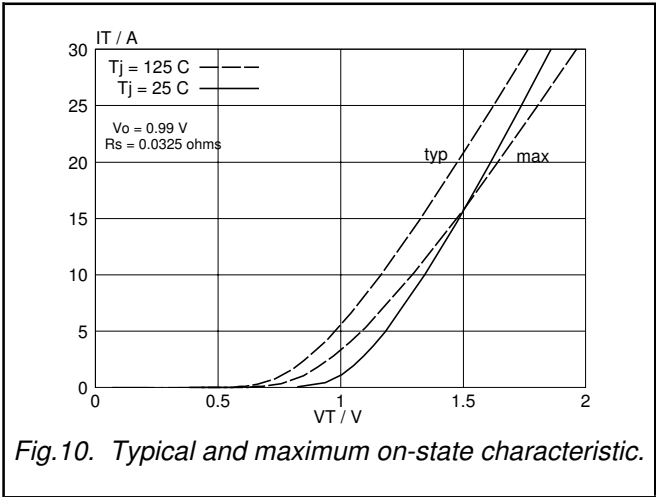
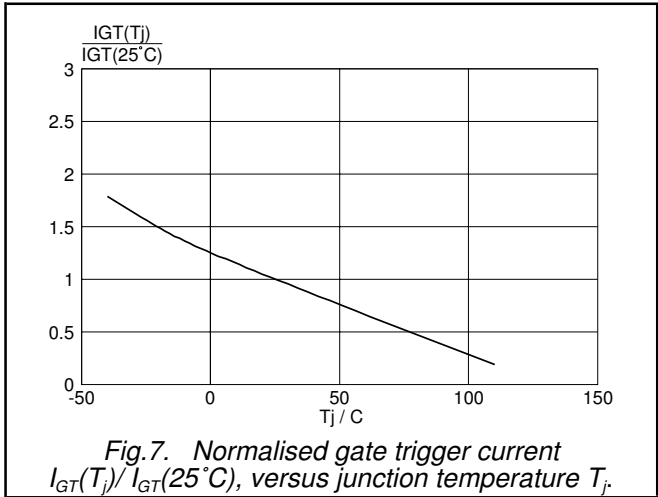
$T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
dV_D/dt	Critical rate of rise of off-state voltage	$V_{DM} = 67\% V_{DRM(max)}$; $T_j = 125\text{ °C}$; exponential waveform; $R_{GK} = 100\ \Omega$	50	100	-	V/ μs
t_{gt}	Gate controlled turn-on time	$I_{TM} = 10\text{ A}$; $V_D = V_{DRM(max)}$; $I_G = 5\text{ mA}$; $dI_G/dt = 0.2\text{ A}/\mu\text{s}$	-	2	-	μs
t_q	Circuit commutated turn-off time	$V_D = 67\% V_{DRM(max)}$; $T_j = 125\text{ °C}$; $I_{TM} = 12\text{ A}$; $V_R = 24\text{ V}$; $dI_{TM}/dt = 10\text{ A}/\mu\text{s}$; $dV_D/dt = 2\text{ V}/\mu\text{s}$; $R_{GK} = 1\text{ k}\Omega$	-	100	-	μs

Thyristors logic level

BT258U series

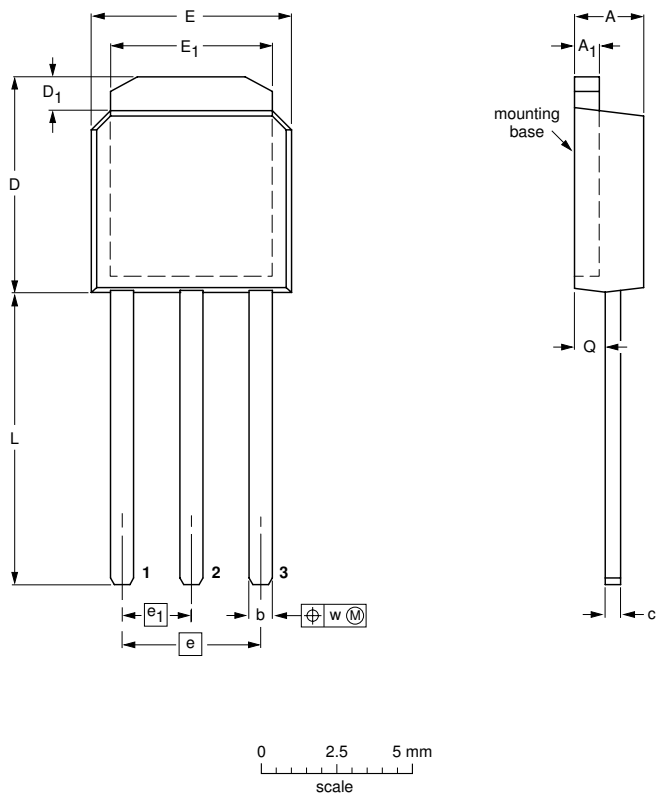




MECHANICAL DATA

Dimensions in mm Net Mass: 1.3 g

Plastic single-ended package (Philips version of I-PAK); 3 leads (in-line) SOT533



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁	b	c	D	D ₁	E	E ₁	e	e ₁	L	Q
mm	2.38 2.22	0.89 0.71	0.89 0.71	0.56 0.46	7.28 6.94	1.06 0.96	6.73 6.47	5.36 5.26	4.57	2.285	9.8 9.4	1.00 1.10

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT533		TO-251				99-02-18

Fig.13. SOT533 (TO251). pin 2 connected to mounting base.

Legal information

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

Notes

1. Please consult the most recently issued document before initiating or completing a design.
2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the content, except for the legal definitions and disclaimers.

Contact information

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