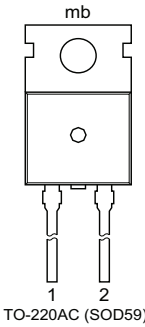
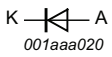
5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 TO-220AC (SOD59)	 *001aaa020*
2	A	anode		
mb	mb	mounting base; cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BYW29E-200	TO-220AC	plastic single-ended package; heatsink mounted; 1 mounting hole; 2-lead TO-220AC	SOD59

7. Marking

Table 4. Marking codes

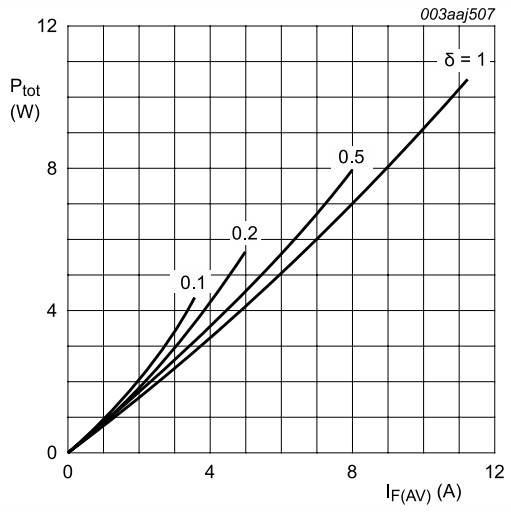
Type number	Marking codes
BYW29E-200	BYW29E-200

8. Limiting values

Table 5. Limiting values

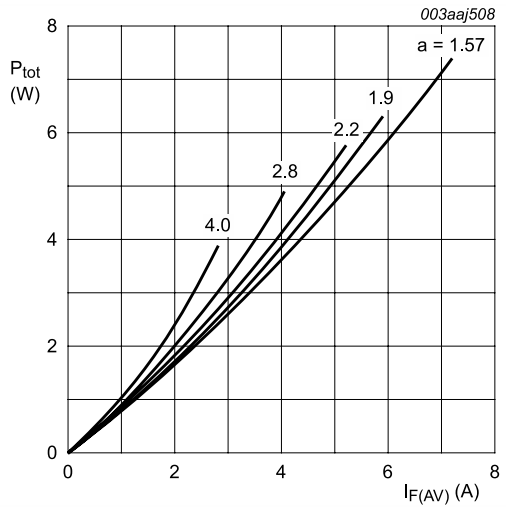
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		200	V
V_{RWM}	crest working reverse voltage		200	V
V_R	reverse voltage		200	V
$I_{F(AV)}$	average forward current	δ = 0.5 ; $T_{mb} \leq 128$ °C ;square-wave pulse; Fig. 1; Fig. 2	8	A
I_{FRM}	repetitive peak forward current	δ = 0.5 ; t_p = 25 µs; $T_{mb} \leq 128$ °C; square-wave pulse	16	A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	80	A
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	88	A
I_{RRM}	repetitive peak reverse current	δ = 0.001 ; t_p = 2 µs	0.2	A
I_{RSM}	non-repetitive peak reverse current	t_p = 100 µs	0.2	A
T_{stg}	storage temperature		-40 to 150	°C
T_j	junction temperature		150	°C
Electrostatic discharge				
V_{ESD}	electrostatic discharge voltage	HBM; C = 250 pF; R = 1.5 kΩ	8	kV



$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$
V_o = 0.791 V; R_s = 0.013 Ω

Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values



a = form factor = $I_{F(RMS)} / I_{F(AV)}$
V_o = 0.791 V; R_s = 0.013 Ω

Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	Fig. 3		-	-	2.7	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air		-	60	-	K/W

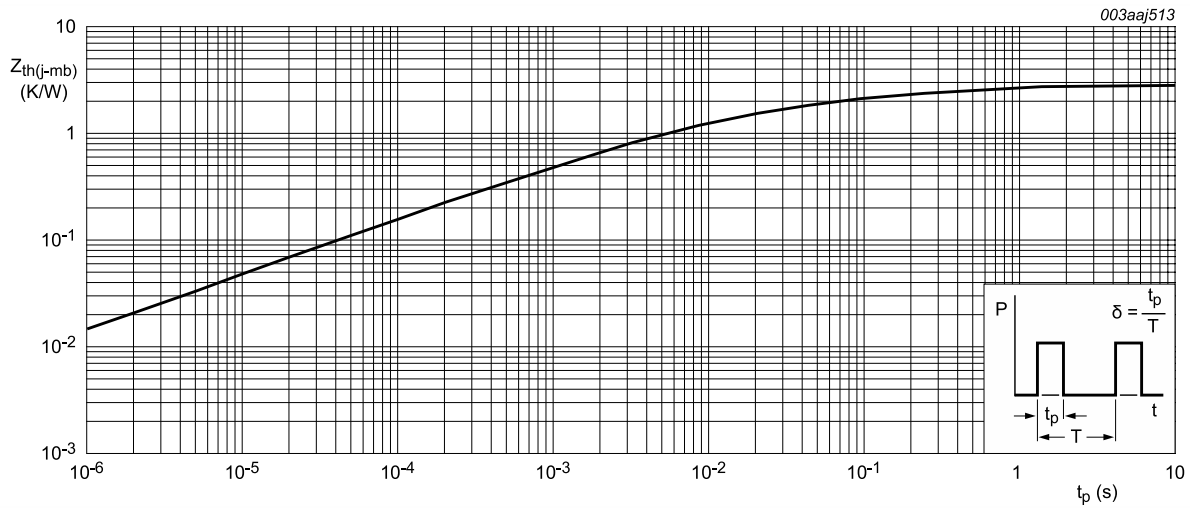
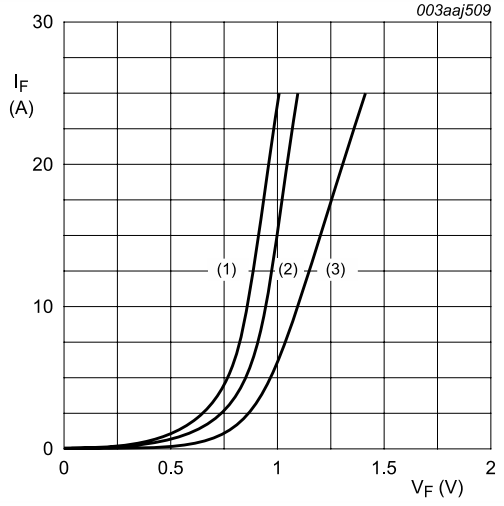


Fig. 3. Transient thermal impedance from junction to mounting base as a function of pulse width

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V_F	forward voltage	I_F = 8 A; T_j = 25 °C; Fig. 4		-	0.92	1.05	V
		I_F = 20 A; T_j = 25 °C; Fig. 4		-	1.1	1.3	V
		I_F = 8 A; T_j = 150 °C; Fig. 4		-	0.8	0.895	V
I_R	reverse current	V_R = 200 V; T_j = 25 °C		-	2	10	µA
		V_R = 200 V; T_j = 100 °C		-	0.2	0.6	mA
Dynamic characteristics							
Q_r	recovered charge	I_F = 2 A; V_R = 30 V; dI_F/dt = 20 A/µs; T_j = 25 °C; Fig. 5; Fig. 6		-	4	11	nC
t_{rr}	reverse recovery time	I_F = 1 A; V_R = 30 V; dI_F/dt = 100 A/µs; T_j = 25 °C; ramp recovery; Fig. 5; Fig. 7		-	20	25	ns
		I_F = 0.5 A; I_R = 1 A; $I_{R(meas)}$ = 0.25 A; T_j = 25 °C; step recovery; Fig. 8		-	15	20	ns
v_{FRM}	forward recovery voltage	I_F = 1 A; dI_F/dt = 10 A/µs; T_j = 25 °C; Fig. 9		-	1	-	V



(1) T_j = 150 °C; typical values
(2) T_j = 150 °C; maximum values
(3) T_j = 25 °C; maximum values
V_o = 0.791 V; R_s = 0.013 Ω

Fig. 4. Forward current as a function of forward voltage

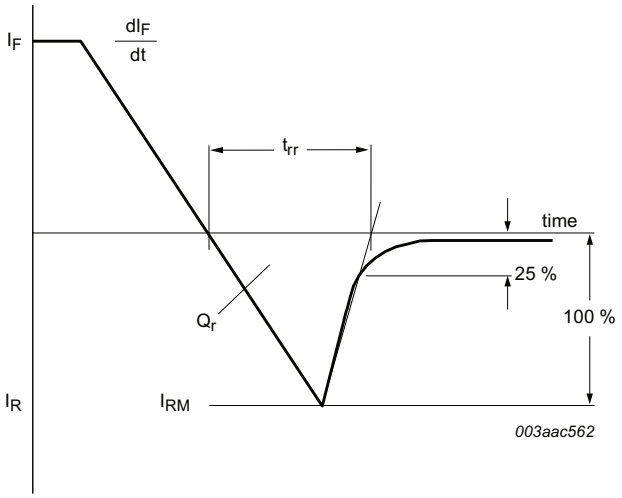
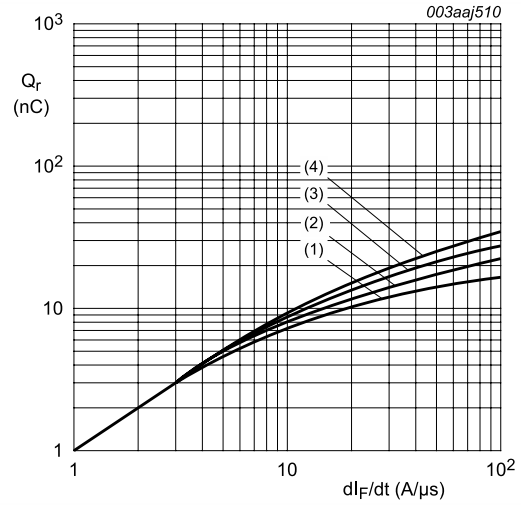
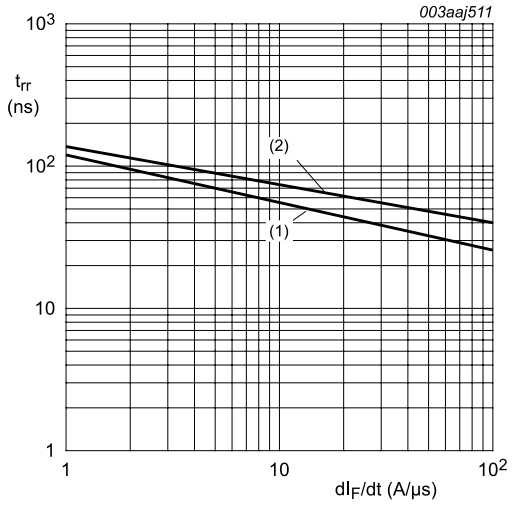


Fig. 5. Reverse recovery definitions; ramp recovery



(1) I_F = 1 A; T_j = 25 °C
(2) I_F = 2 A; T_j = 25 °C
(3) I_F = 5 A; T_j = 25 °C
(4) I_F = 10 A; T_j = 25 °C

Fig. 6. Recovered charge as a function of rate of change of forward current; maximum values



(1) I_F = 1 A; T_j = 25 °C
(2) I_F = 10 A; T_j = 25 °C

Fig. 7. Reverse recovery time as a function of rate of change of forward current; maximum values

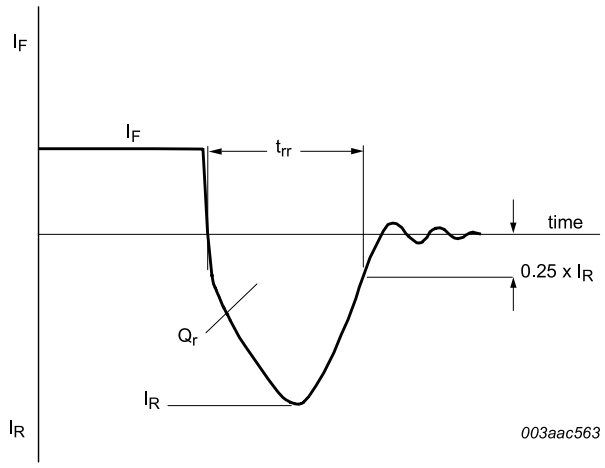


Fig. 8. Reverse recovery definitions; step recovery

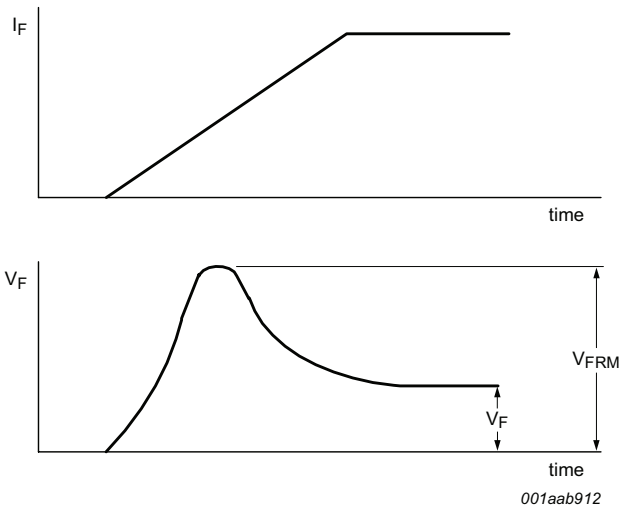
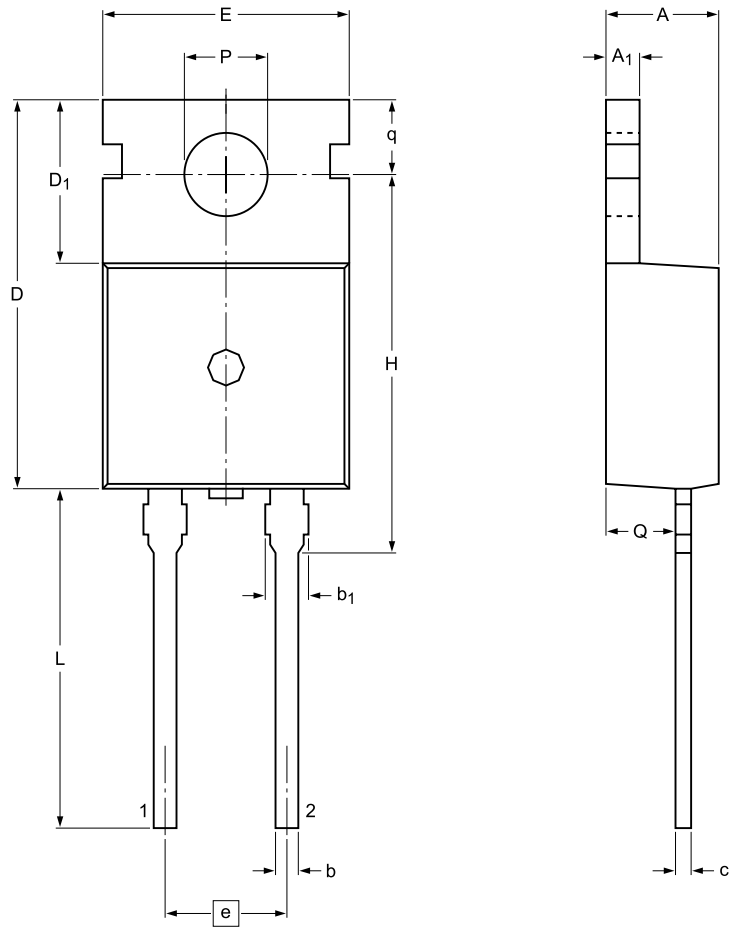


Fig. 9. Forward recovery definitions

11. Package outline

Plastic single-ended package; heatsink mounted; 1 mounting hole; 2-lead TO-220AC **SOD59**



Dimensions

Unit		A	A_1	b	b_1 (1)	c	D	D_1	E	e	H	L	P	Q	q
mm	max	4.7	1.40	0.95	1.7	0.65	15.8	6.8	10.30	5.08 (REF)	16.25	15.0	3.80	2.6	2.9
	nom														
	min	4.3	1.15	0.70	1.3	0.45	15.6	6.4	9.65		15.70	12.5	3.65	2.2	2.7

Note
1. Protruded dambar are included in the dimension.

sod059_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOD59	2-lead TO-220AC					~~09-08-25~~ 12-11-27

12. Legal information

Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
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Product [short] data sheet	Production	This document contains the product specification.

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13. Contents

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