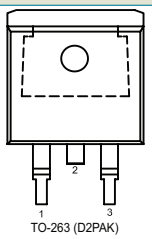
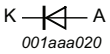
5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	n.c.	not connected	 TO-263 (D2PAK)	 001aaa020
2	K	cathode [1]		
3	A	anode		
mb	K	mounting base; connected to cathode		

[1] It is not possible to connect to pin 2 of the TO263 package.

6. Ordering information

Table 3. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
NXPSC08650B	TO263	NXPSC08650B6J	Reel	800	TO263N	26-Sep-2016

7. Marking

Table 4. Marking codes

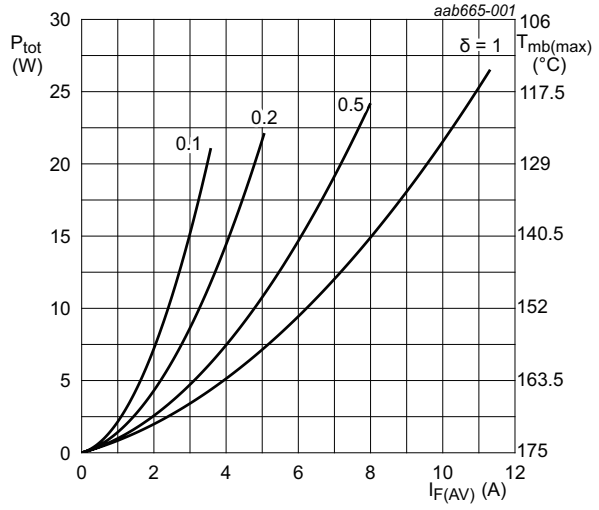
Type number	Marking codes
NXPSC08650B	NXPSC 08650B

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		650	V
V_{RWM}	crest working reverse voltage		650	V
V_R	reverse voltage	DC	650	V
$I_{F(AV)}$	average forward current	δ = 0.5; square-wave pulse; $T_{mb} \leq 119$ °C; Fig. 1; Fig. 2; Fig. 3	8	A
I_{FRM}	repetitive peak forward current	δ = 0.5; t_p = 25 µs; square-wave pulse	16	A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	48	A
		t_p = 10 µs; $T_{j(init)}$ = 25 °C; square-wave pulse	385	A
I^2t	I^2t for fusing	sine-wave pulse; $T_{j(init)}$ = 25 °C; t_p = 10 ms	11.5	A^2s
T_{stg}	storage temperature		-55 to 175	°C
T_j	junction temperature		175	°C



$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$

$V_o = 0.702$ V; $R_s = 0.1452$ Ω

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

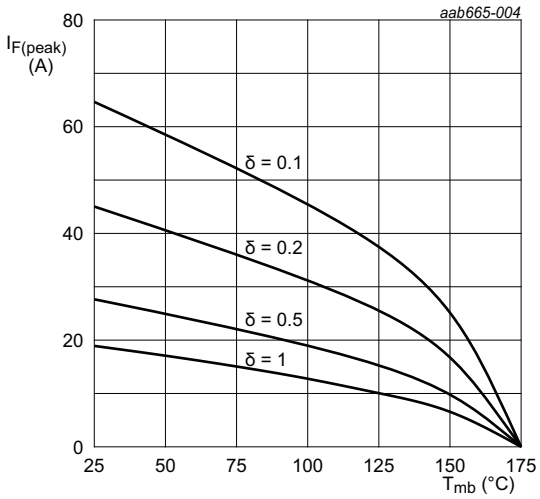


Fig. 2. Current derating as a function of mounting base temperature

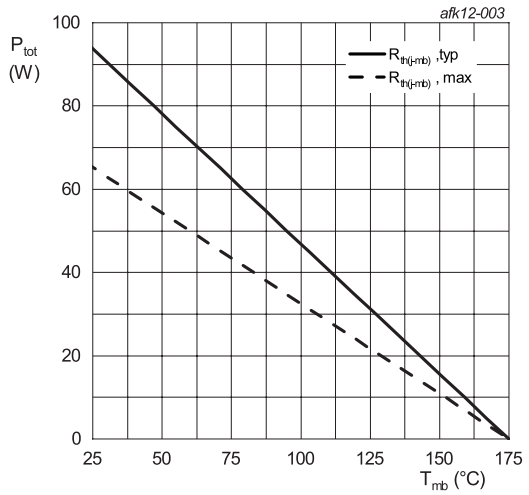


Fig. 3. Total power dissipation as a function of mounting base temperature

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	with heatsink compound; Fig. 4		-	1.6	2.3	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	50	-	K/W

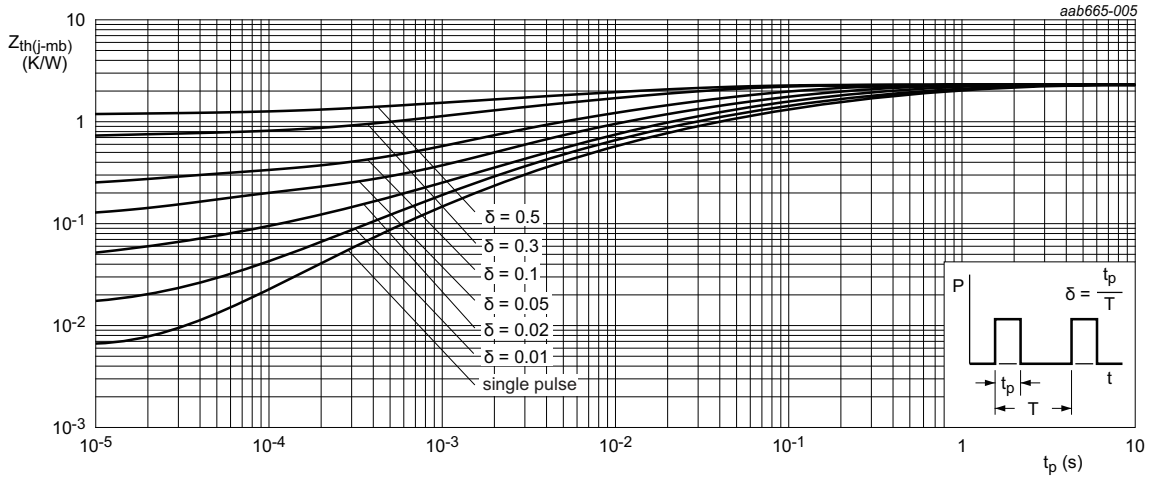
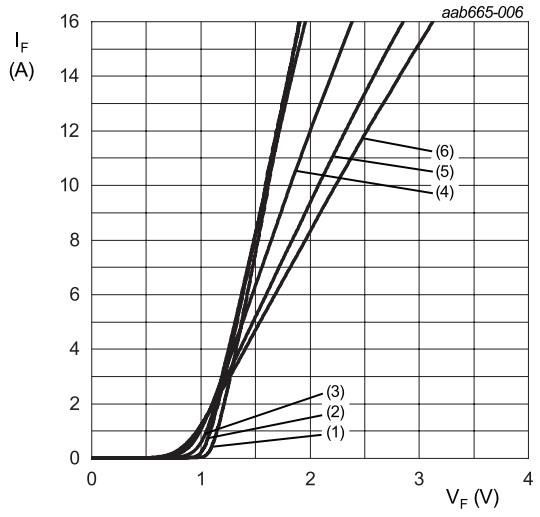


Fig. 4. Transient thermal impedance from junction to mounting base as a function of pulse duration

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V_F	forward current	I_F = 8 A; T_j = 25 °C; Fig. 5		-	1.5	1.7	V
		I_F = 8 A; T_j = 150 °C; Fig. 5		-	1.8	2.1	V
I_R	reverse current	V_R = 650 V; T_j = 25 °C; Fig. 6		-	-	50	µA
		V_R = 650 V; T_j = 150 °C; Fig. 6		-	-	200	µA
Dynamic characteristics							
Q_r	recovered charge	I_F = 8 A; V_R = 400 V; dI_F/dt = 500 A/µs; T_j = 25 °C; Fig. 7		-	13	-	nC
C_d	diode capacitance	f = 1 MHz; V_R = 1 V; T_j = 25 °C		-	267	-	pF
		f = 1 MHz; V_R = 300 V; T_j = 25 °C		-	37	-	pF
		f = 1 MHz; V_R = 600 V; T_j = 25 °C		-	36	-	pF
E_{as}	non-repetitive avalanche energy	I_R = 4.9 A; L = 5 mH; $T_{j(init)}$ = 25 °C		60	-	-	mJ



V_o = 0.702 V; R_s = 0.1452 Ω
(1) T_j = -55 °C; typical values
(2) T_j = 0 °C; typical values
(3) T_j = 25 °C; typical values
(4) T_j = 100 °C; typical values
(5) T_j = 150 °C; typical values
(6) T_j = 175 °C; typical values

Fig. 5. Forward current as a function of forward voltage; typical values

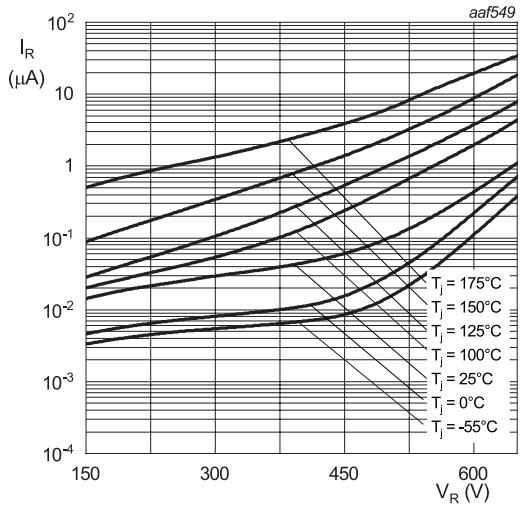


Fig. 6. Reverse leakage current as a function of reverse voltage; typical value

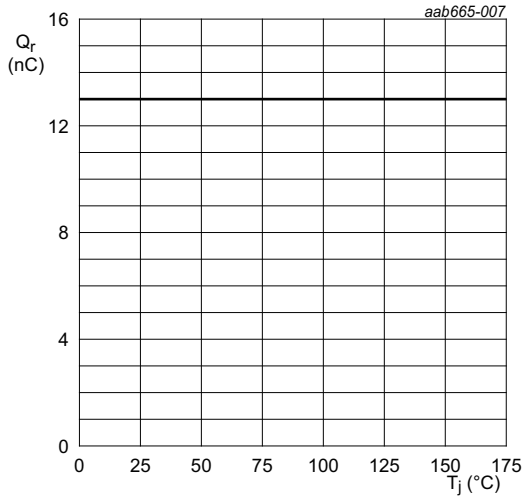
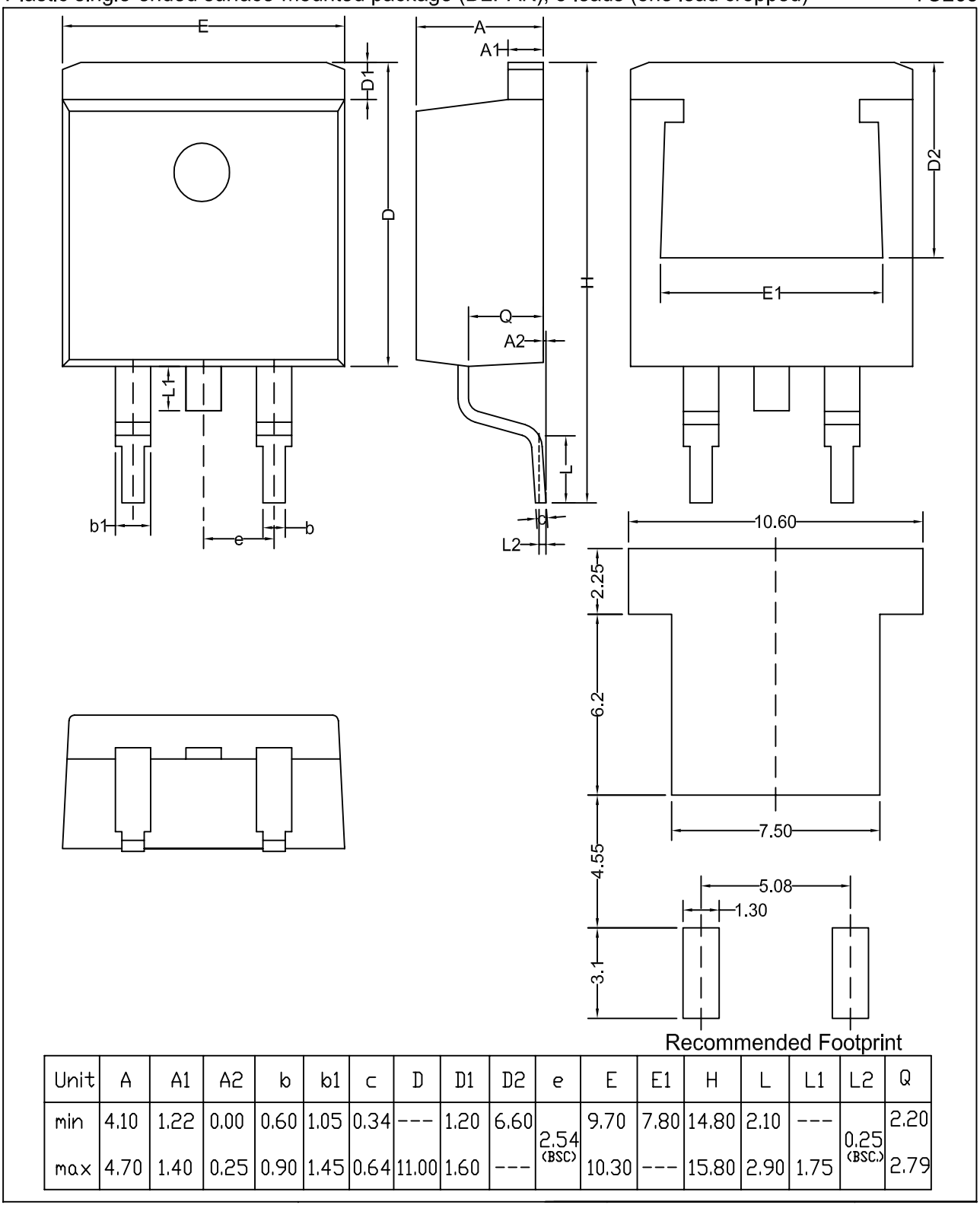


Fig. 7. Recovered charge as a function of junction temperature

11. Package outline

Plastic single-ended surface-mounted package (D2PAK); 3 leads (one lead cropped) TO263



Unit	A	A1	A2	b	b1	c	D	D1	D2	e	E	E1	H	L	L1	L2	Q
min	4.10	1.22	0.00	0.60	1.05	0.34	---	1.20	6.60	2.54 (BSC)	9.70	7.80	14.80	2.10	---	0.25 (BSC)	2.20
max	4.70	1.40	0.25	0.90	1.45	0.64	11.00	1.60	---		10.30	---	15.80	2.90	1.75		2.79

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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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