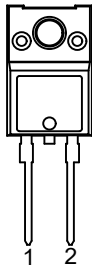
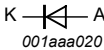


[illegible]

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Q_r	recovered charge	$I_F = 10\text{ A}$; $di_F/dt = 500\text{ A}/\mu\text{s}$; $V_R = 400\text{ V}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 7	-	15	-	nC

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 TO220F-2L	
2	A	anode		
mb	n.c.	mounting base; isolated		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
NXPSC10650X	-	Plastic single-ended through-hole package; isolated heatsink mounted; 1 mounting hole; 2-lead TO-220F	TO220F-2L

7. Limiting values

Table 4. Limiting values

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

Symbol	Parameter	Conditions	Min	Max	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	$\delta = 0.5$; $T_h \leq 25^\circ\text{C}$; square-wave pulse; Fig. 1 ; Fig. 2 ; Fig. 3 ; Fig. 4	-	10	A
I_{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25\ \mu\text{s}$; $T_h \leq 25^\circ\text{C}$; square-wave pulse	-	20	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10\ \text{ms}$; $T_{j(\text{init})} = 25^\circ\text{C}$; sine-wave pulse	-	50	A
		$t_p = 10\ \mu\text{s}$; $T_{j(\text{init})} = 25^\circ\text{C}$; square-wave pulse	-	450	A
T_{stg}	storage temperature		-55	175	$^\circ\text{C}$
T_j	junction temperature		-	175	$^\circ\text{C}$

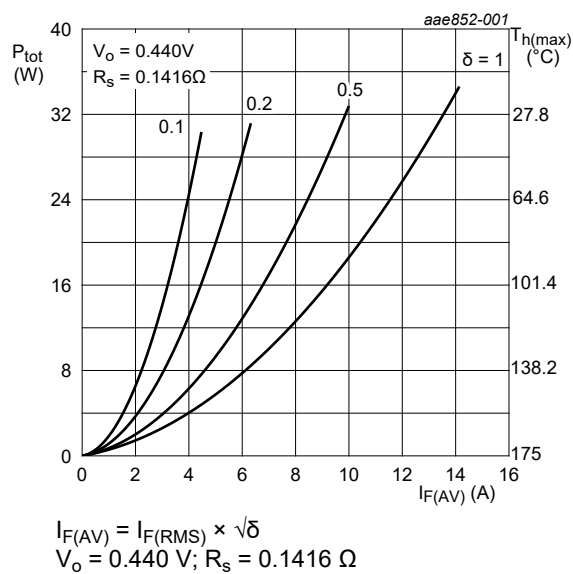


Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values

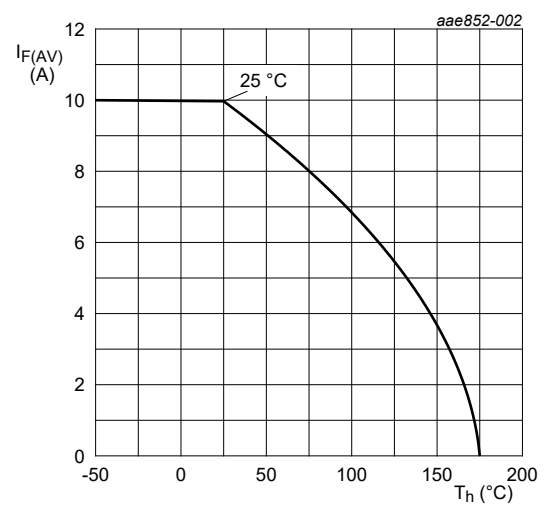


Fig. 2. Forward current as a function of heatsink temperature; maximum values

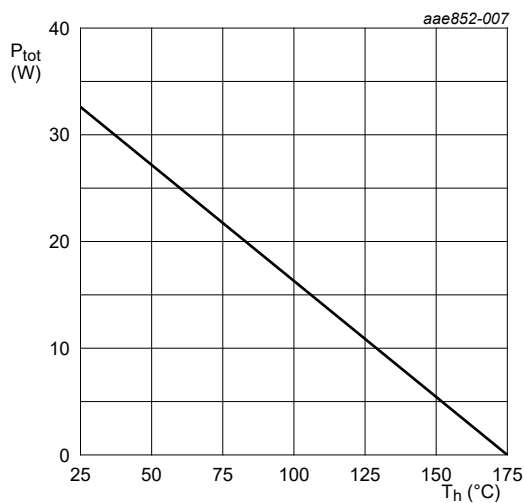


Fig. 3. Total power dissipation as a function of heatsink temperature

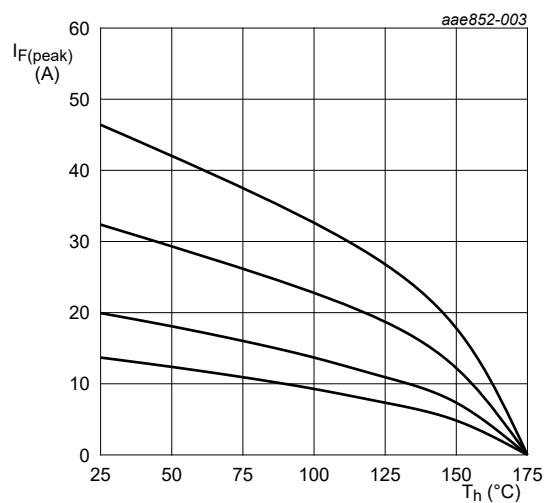


Fig. 4. Current derating as a function of heatsink temperature

8. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-h)}$	thermal resistance from junction to heatsink	with heatsink compound; Fig. 5	-	-	4.6	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	55	-	K/W

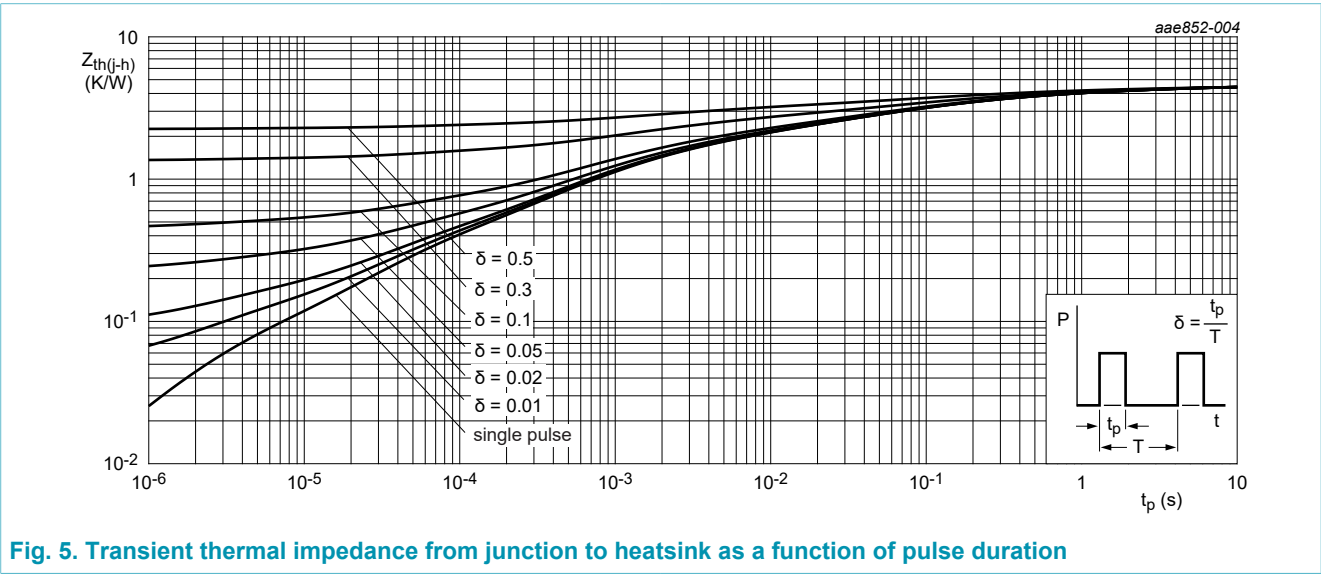


Fig. 5. Transient thermal impedance from junction to heatsink as a function of pulse duration

9. Isolation characteristics

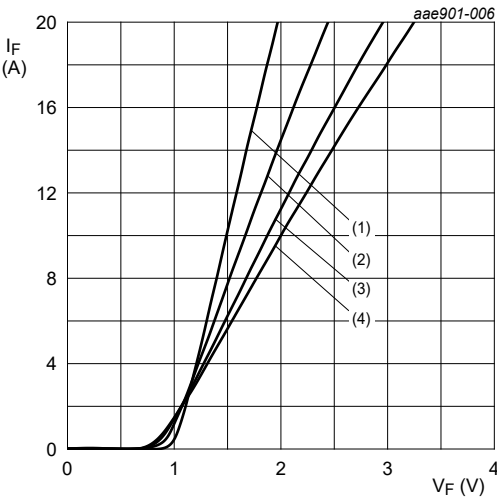
Table 6. Isolation characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{isol(RMS)}$	RMS isolation voltage	from all terminals to external heatsink; sinusoidal waveform; clean and dust free; $50\text{ Hz} \leq f \leq 60\text{ Hz}$; $T_h = 25\text{ }^\circ\text{C}$; $RH = 65\%$	-	-	2500	V

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 10 A; T _j = 25 °C; Fig. 6		-	1.5	1.7	V
		I _F = 10 A; T _j = 150 °C; Fig. 6		-	1.8	2.1	V
I _R	reverse current	V _R = 650 V; T _j = 25 °C		-	-	250	μA
		V _R = 650 V; T _j = 150 °C		-	-	800	μA
Dynamic characteristics							
Q _r	recovered charge	I _F = 10 A; dI _F /dt = 500 A/μs; V _R = 400 V; T _j = 25 °C; Fig. 7		-	15	-	nC
C _d	diode capacitance	f = 1 MHz; V _R = 1 V; T _j = 25 °C		-	300	-	pF
		f = 1 MHz; V _R = 300 V; T _j = 25 °C		-	34	-	pF
		f = 1 MHz; V _R = 600 V; T _j = 25 °C		-	28	-	pF



- (1) $T_j = 25\text{ °C}$; typical values
- (2) $T_j = 100\text{ °C}$; typical values
- (3) $T_j = 150\text{ °C}$; typical values
- (4) $T_j = 175\text{ °C}$; typical values

Fig. 6. Forward current as a function of forward voltage; typical values

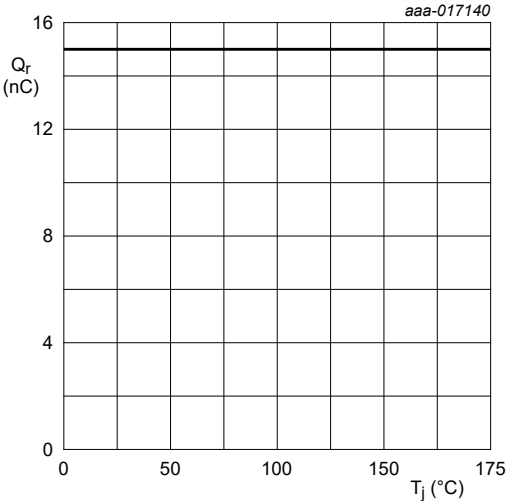
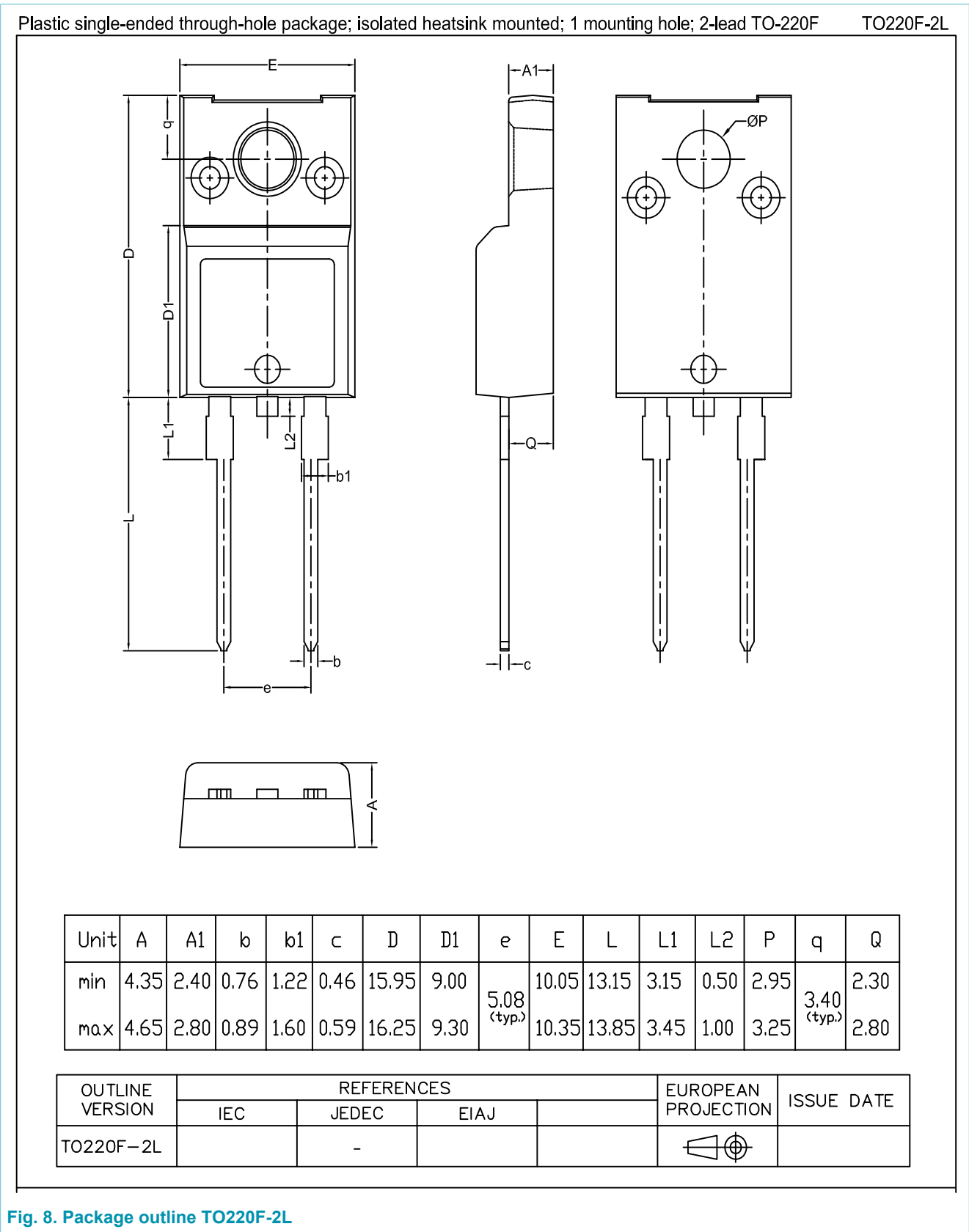


Fig. 7. Recovered charge as a function of junction temperature

11. Package outline



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.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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- [2] The term 'short data sheet' is explained in section "Definitions".
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Date of release: 6 January 2017

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