

1. General description

Ultrafast power diode in ITO220-2L plastic package



2. Features and benefits

- Isolated mounting base with 2500V(RMS) isolation
- Low leakage current
- Low forward voltage drop
- Soft reverse recovery characteristics
- High thermal cycling performance

3. Applications

- Input rectifier
- Regulator diodes combine with fast SCRs

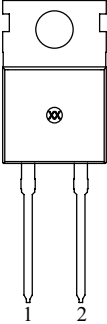
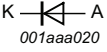
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Notes	Values			Unit
Absolute maximum rating							
V_{RRM}	repetitive peak reverse voltage			600			V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; $T_{mb} \leq 130$ °C; Fig. 1 ; Fig. 2 ; Fig. 3		10			A
I_{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25$ μ s; $T_{mb} \leq 130$ °C; square-wave pulse		20			A
I_{FSM}	non-repetitive peak forward current	$t_p = 10$ ms; $T_{j(initial)} = 25$ °C; sine-wave pulse; Fig. 4		150			A
		$t_p = 8.3$ ms; $T_{j(initial)} = 25$ °C; sine-wave pulse		165			A
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V_F	forward voltage	$I_F = 10$ A; $T_j = 25$ °C; Fig. 6		-	1.07	1.30	V
		$I_F = 10$ A; $T_j = 150$ °C; Fig. 6		-	0.92	1.10	V
Dynamic characteristics							
t_{rr}	reverse recovery time	$I_F = 1$ A; $V_R = 30$ V; $di_F/dt = 100$ A/ μ s; $T_j = 25$ °C; Fig. 7		-	40	-	ns

5. Pinning information

Table 2. Pinning information

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

6. Ordering information

Table 3. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
BYT10Y-600P	IITO220-2L	BYT10Y-600PQ	Tube	50	IITO220P-2L	13-Mar-2023

7. Marking

Table 4. Marking codes

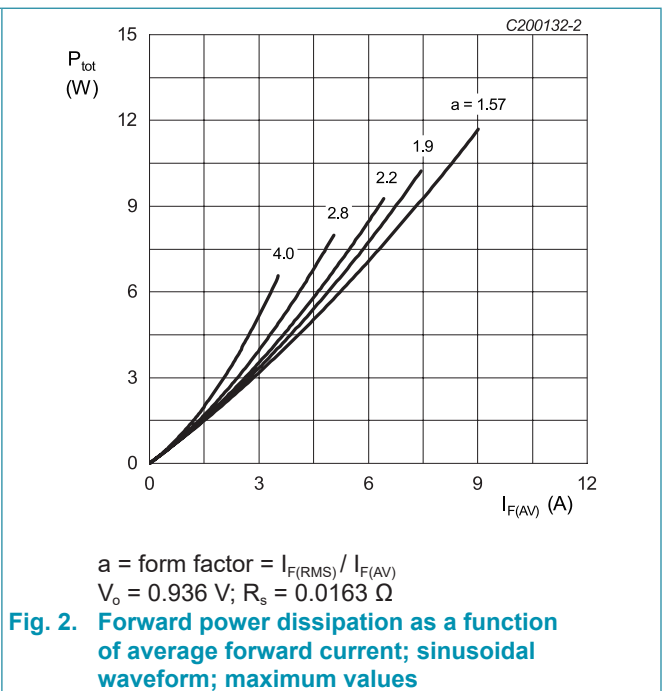
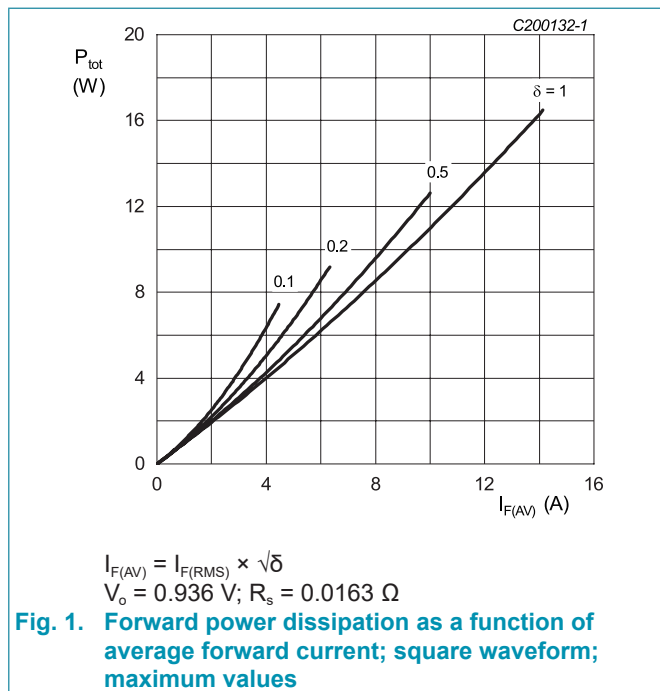
Type number	Marking codes
BYT10Y-600P	BYT10Y 600P

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions	Notes	Values	Unit
V_{RRM}	repetitive peak reverse voltage			600	V
V_{RWM}	crest working reverse voltage			600	V
V_R	reverse voltage	DC		600	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; $T_{mb} \leq 130\text{ }^\circ\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3		10	A
I_{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25\text{ }\mu\text{s}$; $T_{mb} \leq 130\text{ }^\circ\text{C}$; square-wave pulse		20	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse; Fig. 4		150	A
		$t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse		165	A
T_{stg}	storage temperature			-55 to 175	$^\circ\text{C}$
T_j	junction temperature			175	$^\circ\text{C}$



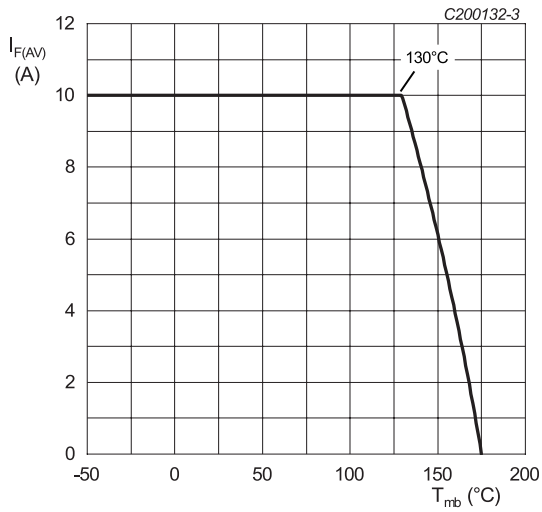


Fig. 3. Forward current as a function of mounting base temperature; maximum values

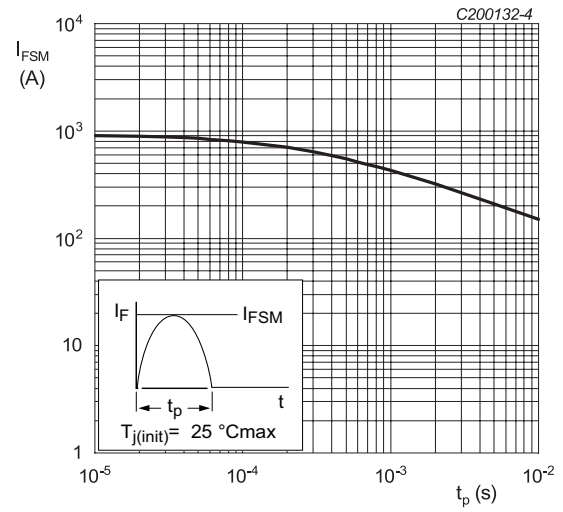


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	Fig. 5		-	-	3.6	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	60	-	K/W

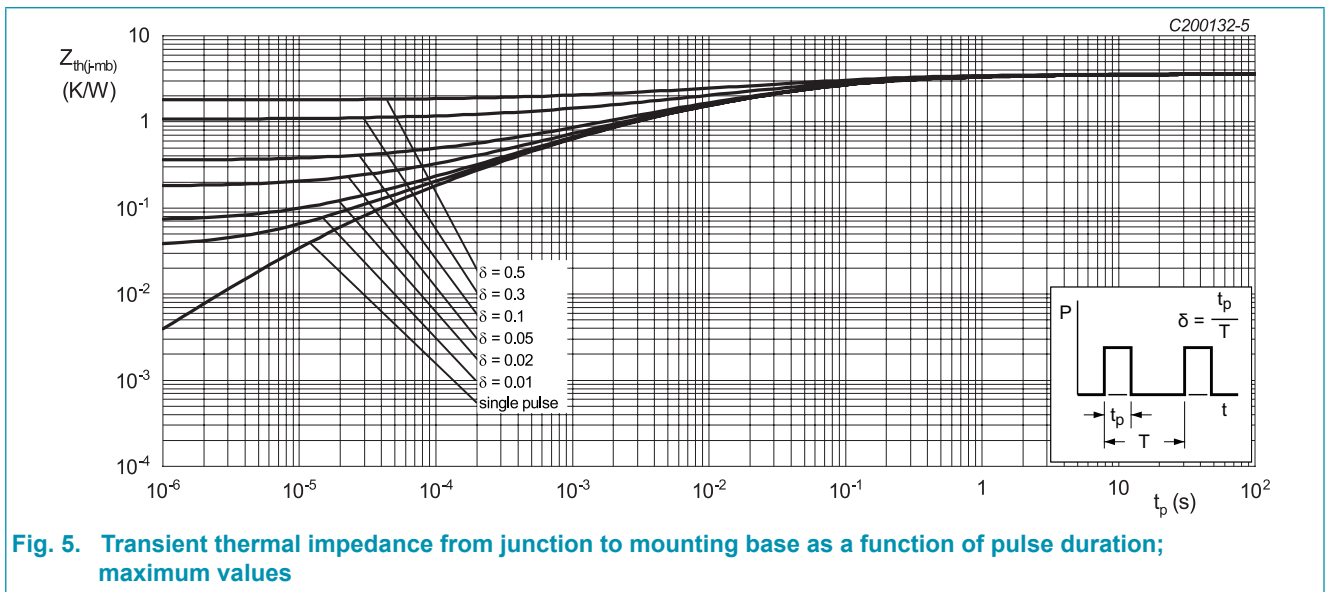
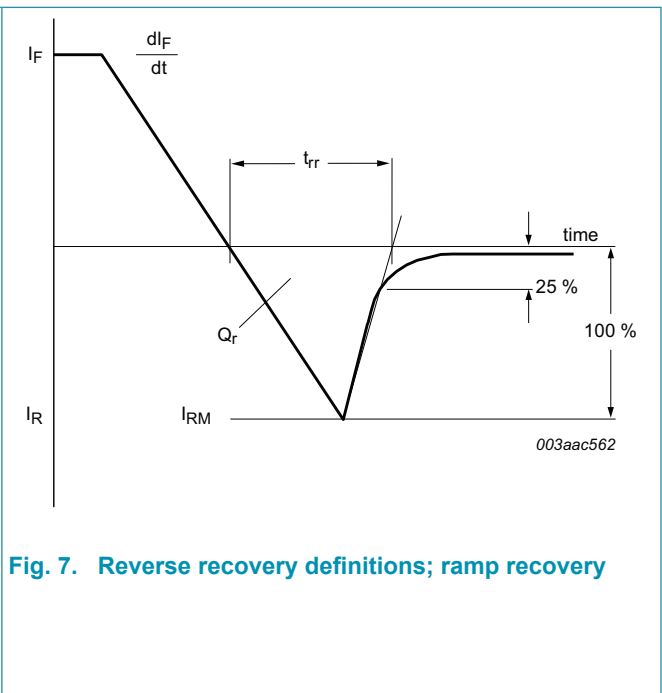
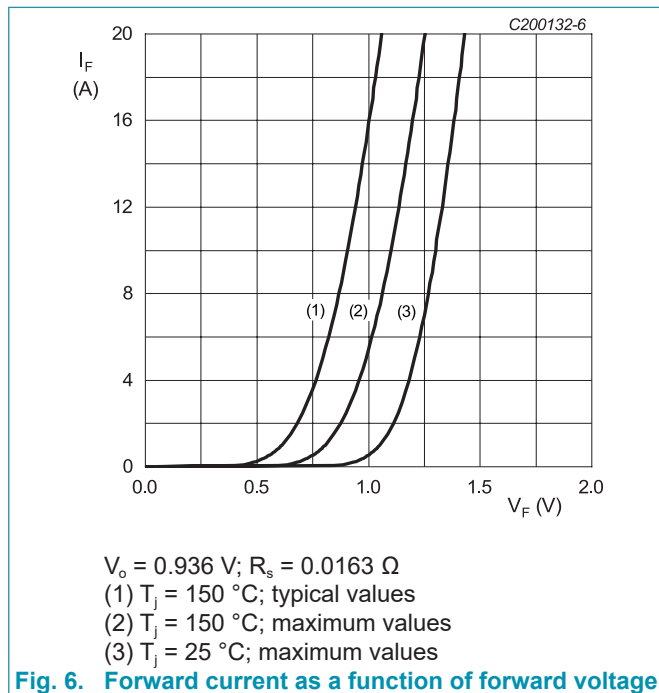


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values

10. Characteristics

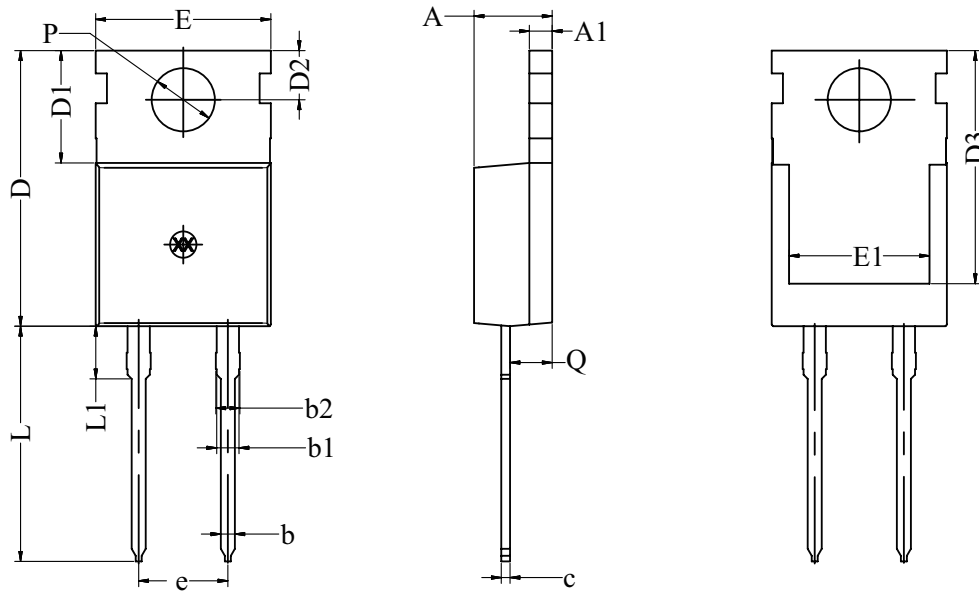
Table 7. Characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V_F	forward voltage	$I_F = 10\text{ A}; T_j = 25\text{ °C}; \text{Fig. 6}$		-	1.07	1.30	V
		$I_F = 10\text{ A}; T_j = 150\text{ °C}; \text{Fig. 6}$		-	0.92	1.10	V
I_R	reverse current	$V_R = 600\text{ V}; T_j = 25\text{ °C}$		-	-	10	μA
		$V_R = 600\text{ V}; T_j = 150\text{ °C}$		-	-	0.4	mA
Dynamic characteristics							
Q_r	reverse charge	$I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 100\text{ A}/\mu\text{s}; T_j = 25\text{ °C}; \text{Fig. 7}$		-	55	-	nC
t_{rr}	reverse recovery time	$I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 100\text{ A}/\mu\text{s}; T_j = 25\text{ °C}; \text{Fig. 7}$		-	40	-	ns
I_{RM}	peak reverse recovery current	$I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 100\text{ A}/\mu\text{s}; T_j = 25\text{ °C}; \text{Fig. 7}$		-	2.8	-	A
		$I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 50\text{ A}/\mu\text{s}; T_j = 25\text{ °C}; \text{Fig. 7}$		-	1.9	-	A



11. Package outline

Plastic single-ended package; isolated heatsink mounted; 1 mounting hole; 2 leads TO-220 IITO220-2L



Dim	All Dimensions in Millimeters		
	Min	Typ	Max
A	4.30	4.45	4.70
A1	1.25	1.30	1.40
b	0.60	0.80	0.90
b1	1.10	1.27	1.40
b2	1.32	1.37	1.72
c	0.40	0.50	0.60
D	15.20	15.70	16.00
D1	6.20	6.40	6.60
D2	2.70	2.80	3.00
D3	12.98	13.28	13.58
E	9.70	10.00	10.30
E1	7.50	8.00	8.50
e	5.08(BSC)		
L	12.80	13.40	14.00
L1	2.80	3.00	3.20
P	3.50	3.60	3.70
Q	2.20	2.40	2.60

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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