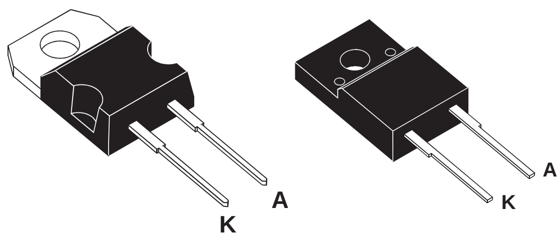
DTVseries

(CRT HORIZONTAL DEFLECTION) HIGH VOLTAGE DAMPER DIODE

MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	**5 A to 10 A**
V_{RRM}	**1500 V**
V_F	**1.3 V to 1.5 V**



TO-220AC
DTVxxxD

ISOWATT220AC
DTVxxxF

FEATURES AND BENEFITS

- HIGH BREAKDOWN VOLTAGE CAPABILITY
- VERY FAST RECOVERY DIODE
- SPECIFIED TURN ON SWITCHING CHARACTERISTICS
- LOW STATIC AND PEAK FORWARD VOLTAGE DROP FOR LOW DISSIPATION
- SUITED TO 32-110kHz MONITORS AND 16kHz TV DEFLECTION
- INSULATED VERSION (ISOWATT220AC):
  Insulating voltage = 2000V DC
  Capacitance = 12pF
- PLANAR TECHNOLOGY ALLOWING HIGH QUALITY AND BEST ELECTRICAL CHARACTERISTICS

DESCRIPTION

High voltage diode with high current capability dedicated to horizontal deflection. DTV16 is optimized to TV meanwhile DTV32 to DTV110 are covering the full range of monitors from the low end to the professional hi-definition SXGA CAD display units.

These devices are packaged either in TO220-AC or in ISOWATT220AC.

ABSOLUTE RATINGS

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		1500	V
$I_{F(RMS)}$	RMS forward current		15	A
I_{FSM}	Surge non repetitive forward current tp = 10ms half sine wave	DTV16	50	A
		DTV32	75	
		DTV56	80	
		DTV64	80	
		DTV82	80	
		DTV110	80	
T_{stg}	Storage temperature range		-65 to 150	°C
T_j	Maximum operating junction temperature		150	°C

THERMAL RESISTANCES

Symbol	Parameter		Value		Unit
			TO-220AC	ISOWATT220AC	
$R_{th(j-c)}$	Junction to case thermal resistance	DTV16	3	5.5	°C/W
		DTV32	2.5	4.75	
		DTV56	2	4	
		DTV64	1.8	4	
		DTV82	1.6	3.7	
		DTV110	1.3	3.5	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Value				Unit
			Tj = 25°C		Tj = 125°C		
			Typ	Max	Typ	Max	
V_F *	I_F = 5 A	DTV16		1.6	1.0	1.5	V
	I_F = 6 A	DTV32		1.5	1.1	1.35	
	I_F = 6 A	DTV56		1.8	1.1	1.5	
	I_F = 6 A	DTV64		1.7	1.1	1.4	
	I_F = 6 A	DTV82		1.8	1.0	1.3	
	I_F = 10 A	DTV110		2.3	1.15	1.5	
I_R **	$V_R = V_{RRM}$	DTV16		60	100	500	μA
		DTV32		100	100	1000	
		DTV56		100	100	1000	
		DTV64		100	100	1000	
		DTV82		100	100	1000	
		DTV110		100	100	1000	

pulse test : * tp = 380 μs, δ < 2%
** tp = 5 ms, δ < 2%

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Typ	Max	Unit
t_{rr}	I_F = 100m A I_R = 100mA I_{RR} = 10mA	Tj = 25°C	DTV16	1500		ns
			DTV32	850		
			DTV56	750		
			DTV64	750		
			DTV82	675		
			DTV110	625		
t_{rr}	I_F = 1 A dI_F/dt =-50A/µs V_R =30V	Tj = 25°C	DTV16	200	300	ns
			DTV32	130	175	
			DTV56	110	135	
			DTV64	110	135	
			DTV82	105	125	
			DTV110	95	115	

TURN-ON SWITCHING CHARACTERISTICS

Symbol	Test Conditions			Typ	Max	Unit
t_{fr}	I_F = 6 A dI_F/dt = 80 A/µs V_{FR} =3V	Tj = 100°C	DTV16	350		ns
			DTV32	570		
			DTV56	350		
			DTV64	350		
			DTV82	270		
			DTV110	250		
V_{FP}	I_F = 6A dI_F/dt = 80 A/µs	Tj = 100°C	DTV16	25	34	V
			DTV32	21	28	
			DTV56	19	26	
			DTV64	18	22	
			DTV82	14	18	
			DTV110	11	14	

To evaluate the maximum conduction losses use the following equation :

DTV16 $P = 1.14 \times I_{F(AV)} + 0.072 \times I_F{}^2{}_{(RMS)}$

DTV32 $P = 1.069 \times I_{F(AV)} + 0.047 \times I_F{}^2{}_{(RMS)}$

DTV56 $P = 1.15 \times I_{F(AV)} + 0.059 \times I_F{}^2{}_{(RMS)}$

DTV64 $P = 1.06 \times I_{F(AV)} + 0.053 \times I_F{}^2{}_{(RMS)}$

DTV82 $P = 1.01 \times I_{F(AV)} + 0.048 \times I_F{}^2{}_{(RMS)}$

DTV110 $P = 1.12 \times I_{F(AV)} + 0.038 \times I_F{}^2{}_{(RMS)}$

Fig. 1-1: Power dissipation versus peak forward current (triangular waveform, δ=0.45).

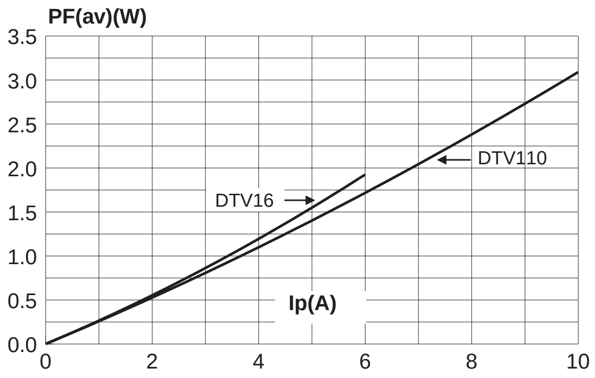


Fig. 1-2: Power dissipation versus peak forward current (triangular waveform, δ=0.45).

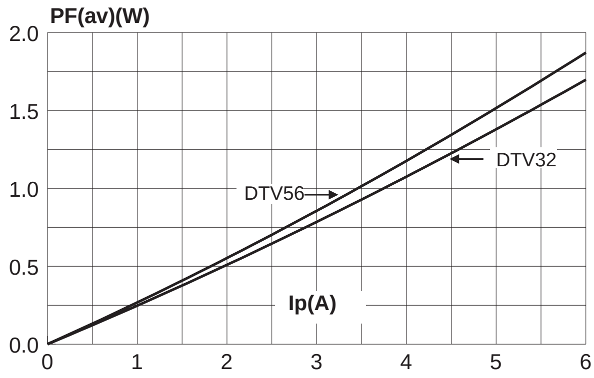


Fig. 1-3: Power dissipation versus peak forward current (triangular waveform, δ=0.45).

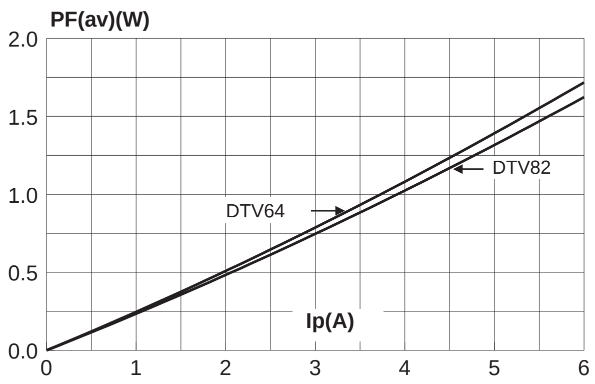


Fig. 2-1: Average current versus case temperature (δ=0.5) (TO-220AC).

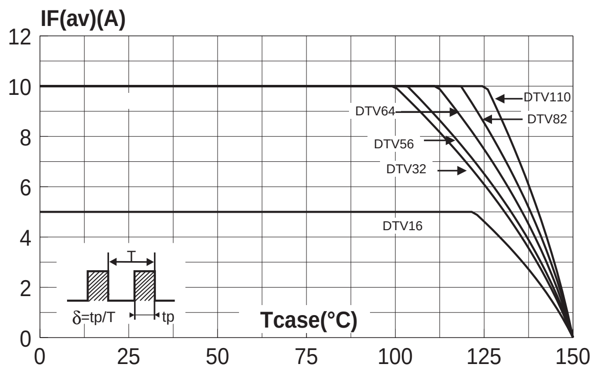


Fig. 2-2: Average current versus case temperature (δ=0.5) (ISOWATT220AC).

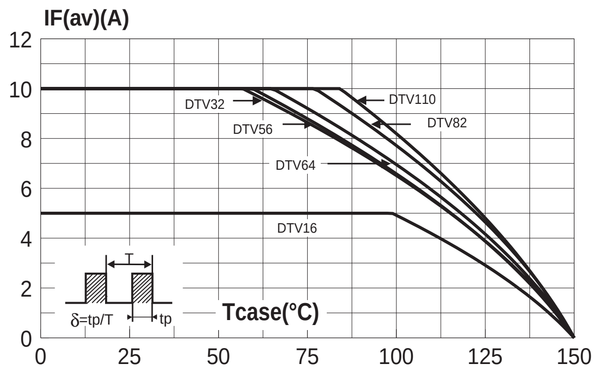


Fig. 3-1: Forward voltage drop versus forward current (DTV16D/F).

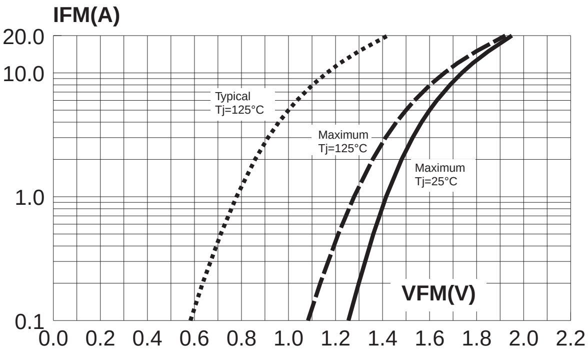


Fig. 3-2: Forward voltage drop versus forward current (DTV32D/F).

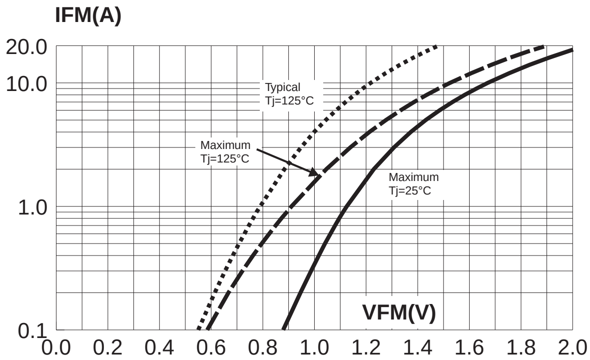


Fig. 3-3: Forward voltage drop versus forward current (DTV56D/F).

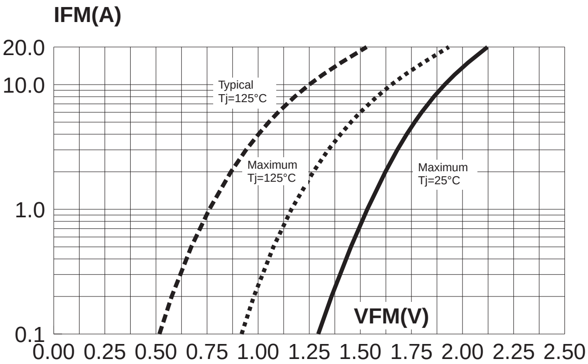


Fig. 3-4: Forward voltage drop versus forward current (DTV64D/F).

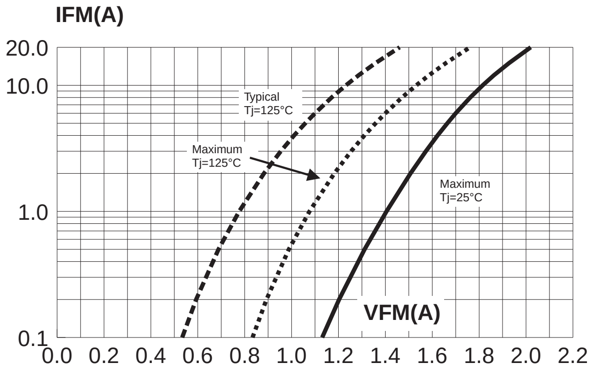


Fig. 3-5: Forward voltage drop versus forward current (DTV82D/F).

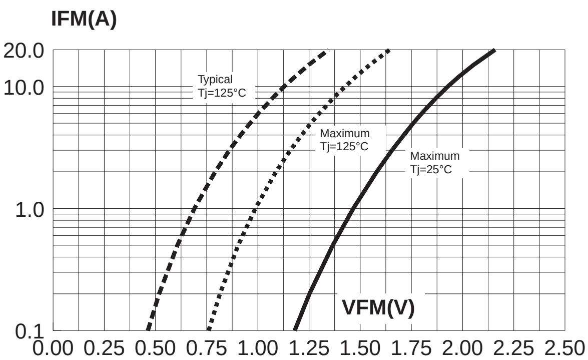


Fig. 3-6: Forward voltage drop versus forward current (DTV110D/F).

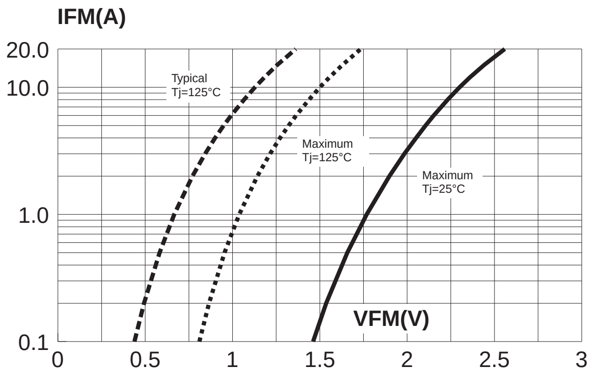


Fig. 4-1: Non repetitive surge peak forward current versus overload duration (TO-220AC) (DTV16D / DTV32D / DTV56D).

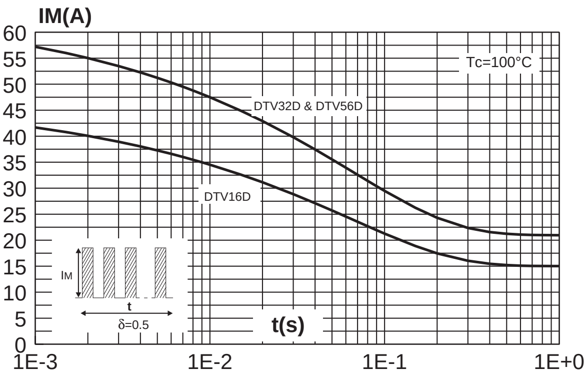


Fig. 4-2: Non repetitive surge peak forward current versus overload duration (ISOWATT220AC) (DTV16F / DTV32F / DTV56F).

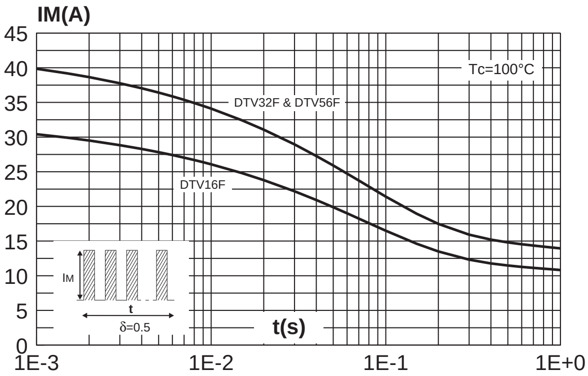


Fig. 4-3: Non repetitive surge peak forward current versus overload duration (TO-220AC) (DTV64D / DTV82D / DTV110D).

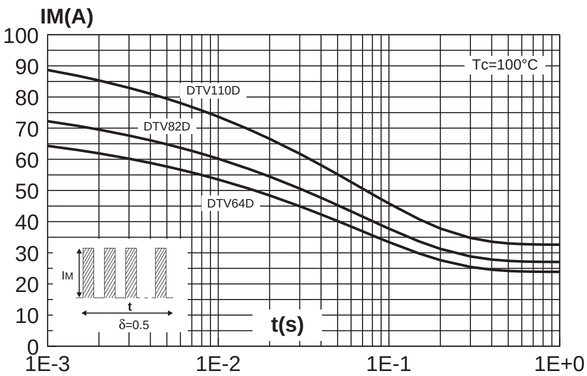


Fig. 4-4: Non repetitive surge peak forward current versus overload duration (ISOWATT220AC) (DTV64F / DTV82F / DTV110F).

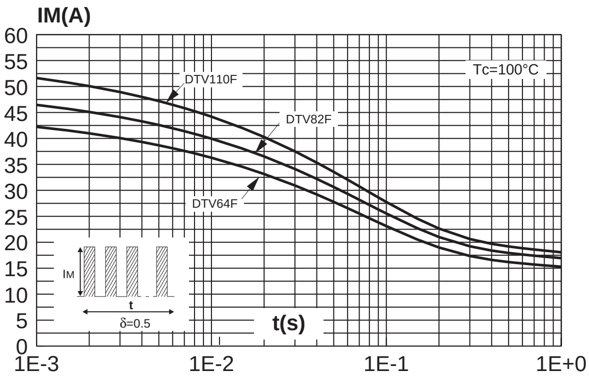


Fig. 5.1: Reverse recovery charges versus dIF/dt (DTV16D/F).

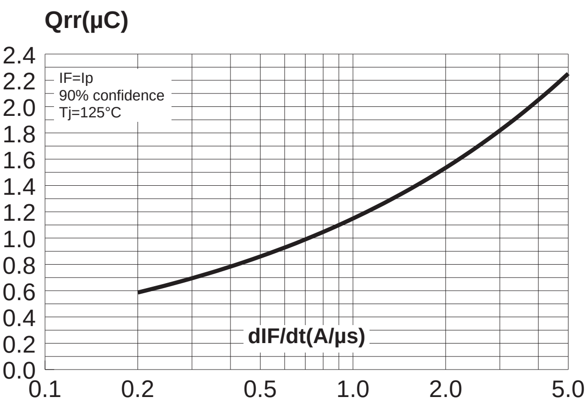


Fig. 5.2: Reverse recovery charges versus dIF/dt.

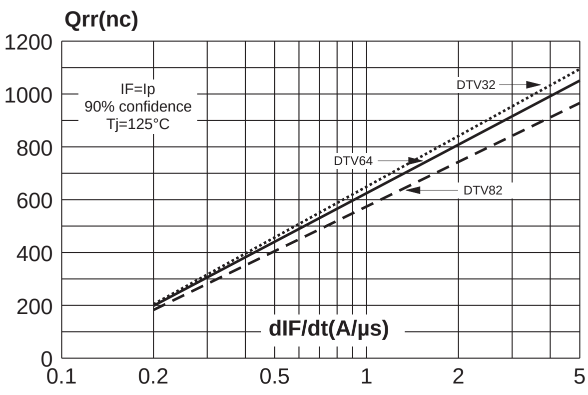


Fig. 5.3: Reverse recovery charges versus dIF/dt.

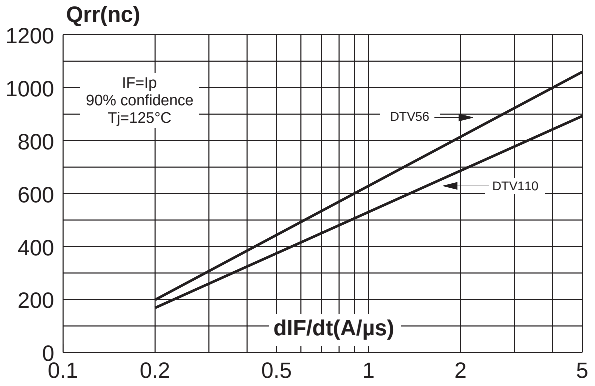


Fig. 6.1: Reverse recovery current versus dIF/dt.

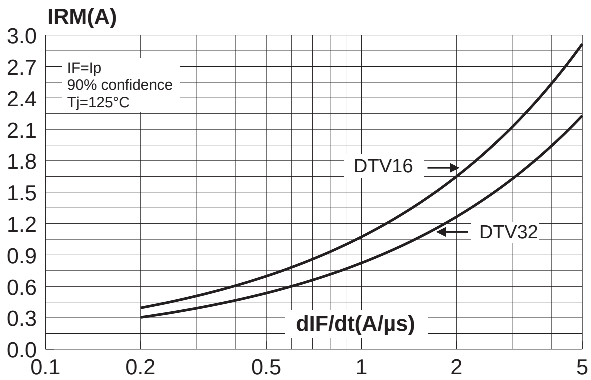


Fig. 6.2: Reverse recovery current versus dIF/dt.

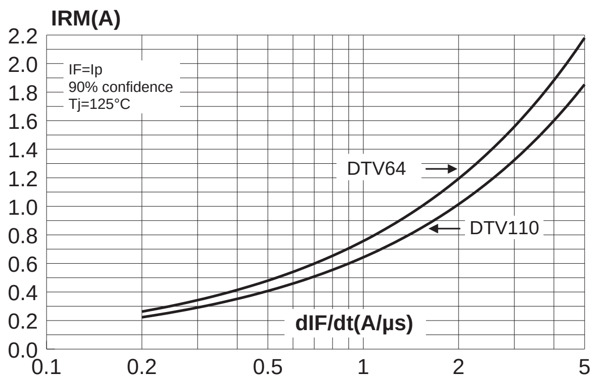


Fig. 6.3: Reverse recovery current versus dIF/dt.

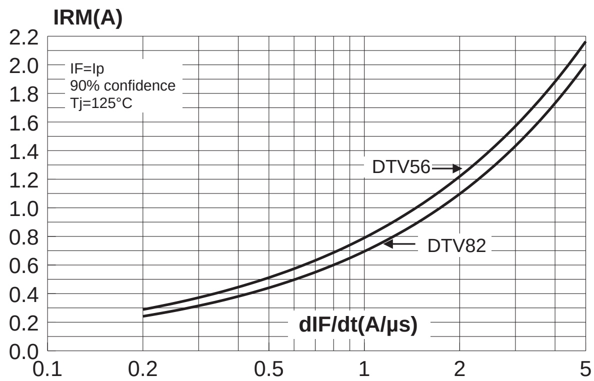


Fig. 7-1: Transient peak forward voltage versus dIF/dt.

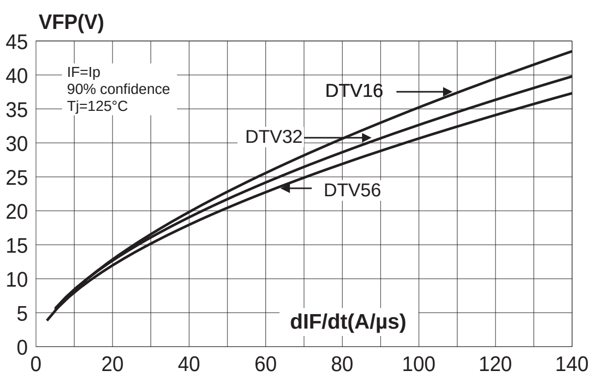


Fig. 7.2: Transient peak forward voltage versus dIF/dt.

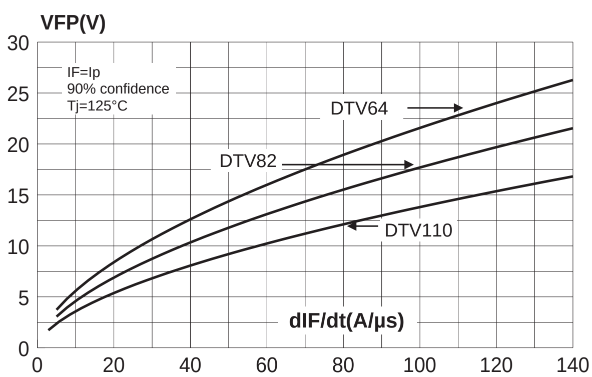


Fig. 8.1: Forward recovery time versus dIF/dt.

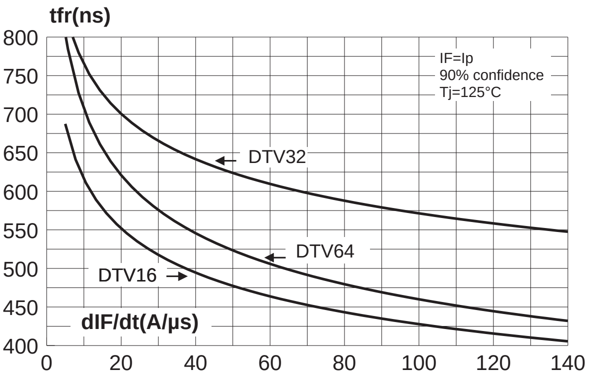


Fig. 8-2: Forward recovery time versus dIF/dt.

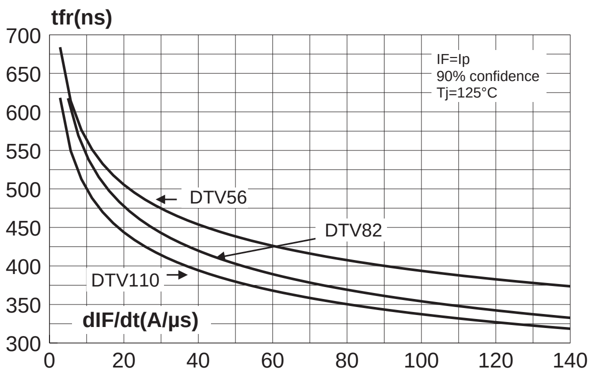


Fig. 9: Dynamic parameters versus junction temperature.

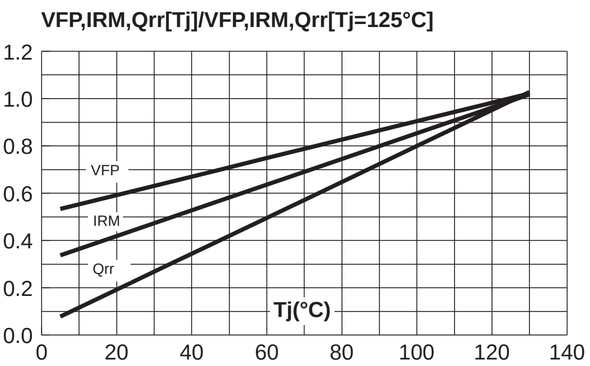


Fig. 10: Junction capacitance versus reverse voltage applied (typical values).

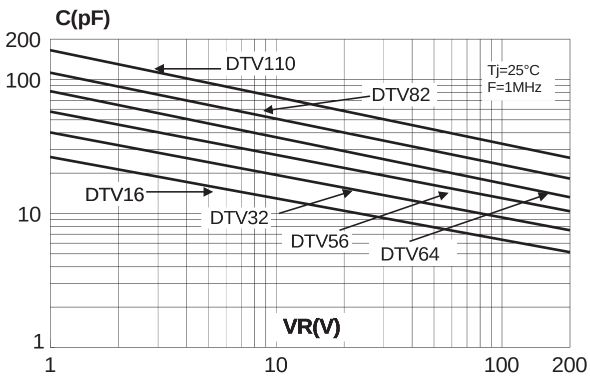


Fig. 11-1: Relative variation of thermal impedance junction to case versus pulse duration (ISOWATT220AC).

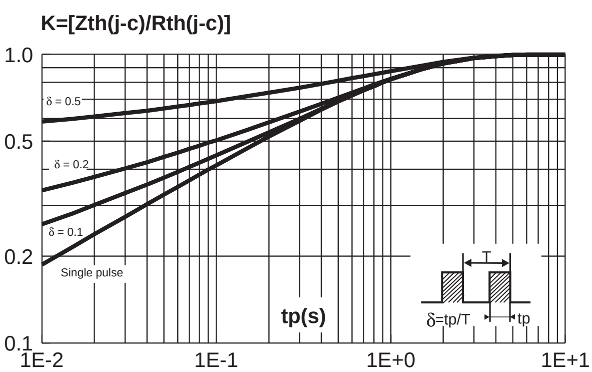
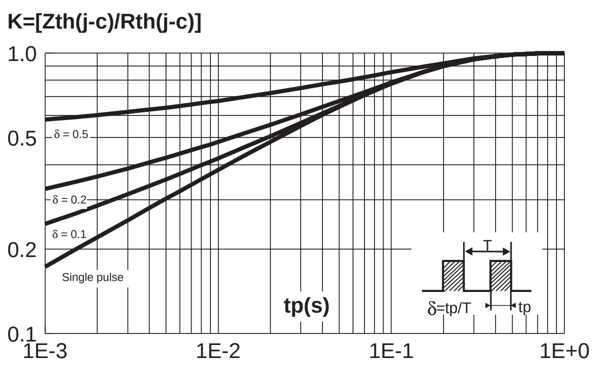
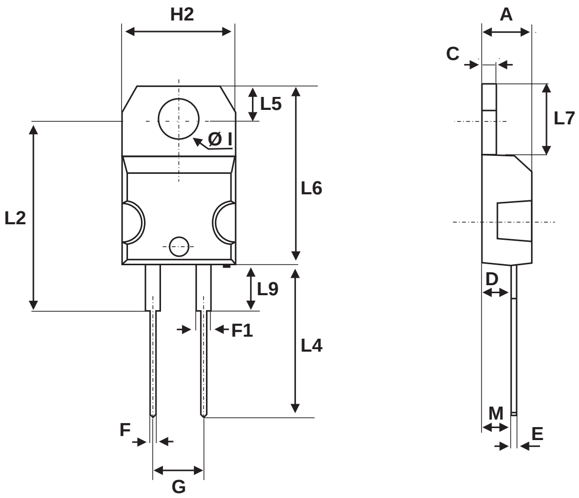


Fig. 12-2: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC).



PACKAGE DATA

TO-220AC (plastic) (JEDEC outline)

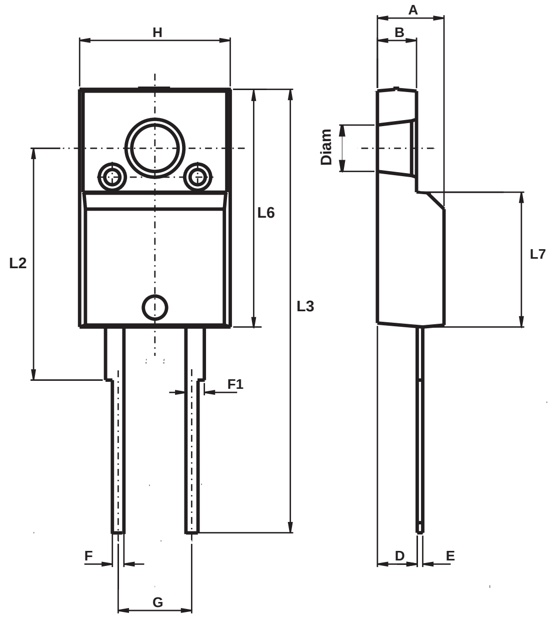


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

- Cooling method : c.
- Torque value : 0.55 m.N typ (0.70 m.N max).

PACKAGE DATA

ISOWATT220AC (plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	2.50		2.70	0.098		0.106
D	2.40		2.75	0.094		0.108
E	0.40		0.70	0.016		0.028
F	0.75		1.00	0.030		0.039
F1	1.15		1.70	0.045		0.067
G	4.95		5.20	0.195		0.205
H	10.00		10.40	0.394		0.409
L2		16.00			0.630	
L3	28.60		30.60	1.125		1.205
L6	15.90		16.40	0.626		0.646
L7	9.00		9.30	0.354		0.366
Diam	3.00		3.20	0.118		0.126

- Cooling method : C.
- Torque value : 0.55 m.N typ (0.70 m.N max).
- Electrical isolation : 2000V DC
- Capacitance : 12 pF

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
DTV16D DTV32D DTV56D DTV64D DTV82D DTV110D	DTV16D DTV32D DTV56D DTV64D DTV82D DTV110D	TO-220AC	1.86g	50	Tube
DTV16F DTV32F DTV56F DTV64F DTV82F DTV110F	DTV16F DTV32F DTV56F DTV64F DTV82F DTV110F	ISOWATT220AC	2g	50	Tube

- Epoxy meets UL94, V0

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