Silicon Diode

BYT12P/800A

800V / 25A

DATASHEET

OEM – Temic

Source: Temic Datasheet Paperware

Datasheet Rev. 1.3 – 04/19 – data without warranty / liability

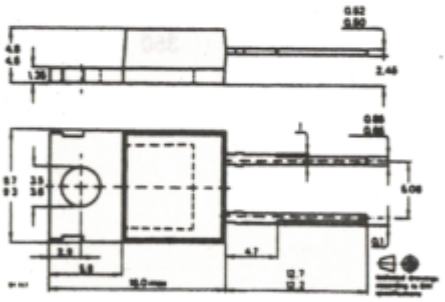
BYT 12P /600A/800A

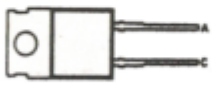
Fast Recovery Silicon Power Diode

Application:
- Fast switched mode power supplies
- Freewheeling diodes and snubber diodes in motor control circuits

Features:
- Multiple diffusion
- Mesa glasspassivated
- Low switch on power losses
- Good soft recovery behavior
- Fast forward recovery time
- Fast reverse recovery time
- Low reverse current
- Very low turn on transient peak voltage
- Very good reverse current stability at high temperature
- Low thermal resistance

Dimensions in mm:





Cathode connected with metallic surface

plastic case DO 220

Absolute maximum ratings

Reverse voltage, Repetitive peak reverse voltage	$V_R = V_{RRM}$	1000	V
Surge forward current $t_p = 10$ ms	I_{FSM}	150	A
Repetitive peak forward current	I_{FRM}	25	A
Average forward current	I_{FAV}	12	A
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-40...+150	°C

Maximum thermal resistances

Junction case	R_{thJC}	2.0	K/W
Junction ambient	R_{thJA}	85	K/W

Characteristics

T_j = 25°C, unless otherwise specified

		Typ.	Max.	
Forward voltage				
I_F = 12 A	V_F		1.9	V
I_F = 12 A, T_j = 100 °C	V_F		1.8	V
Reverse current				
$V_R = V_{RRM}$	I_R		50	µA
$V_R = V_{RRM}$, T_j = 100 °C	I_R		2.5	mA
Forward recovery time				
I_F = 12 A, $di_F/dt \leq$ 50 A/µs	t_{fr}	350		ns
Turn ON transient peak voltage, Fig.1	V_{FP}		4,5	V
Turn OFF switching characteristic Fig.2				
I_F = 12 A, $di_F/dt \leq$ -50 A/µs, V_{Batt} = 200 V, T_j = 100 °C				
Reverse recovery current	I_{RM}		6	A
Reverse recovery time	t_{IRM}		160	ns
$I_R = 0{,}25 \times I_{RM}$	t_{rr}	180		ns
I_F = 0.5 A, I_R = 1 A, i_R = 0.25 A	t_{rr}		50	ns

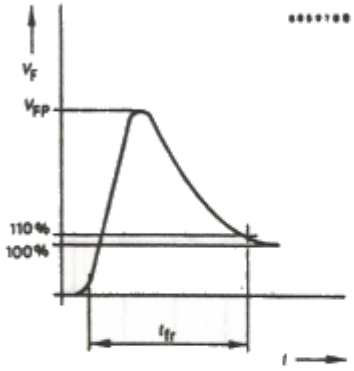


Fig. 1 Turn ON transient peak voltage

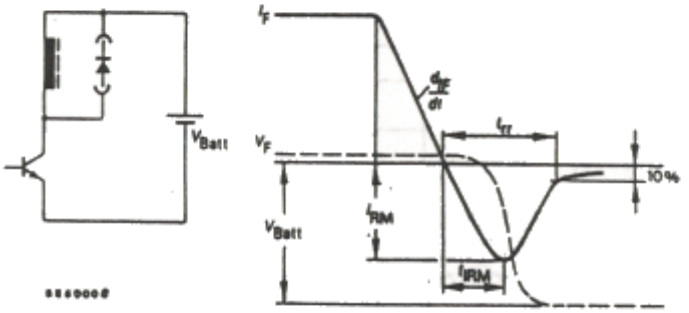
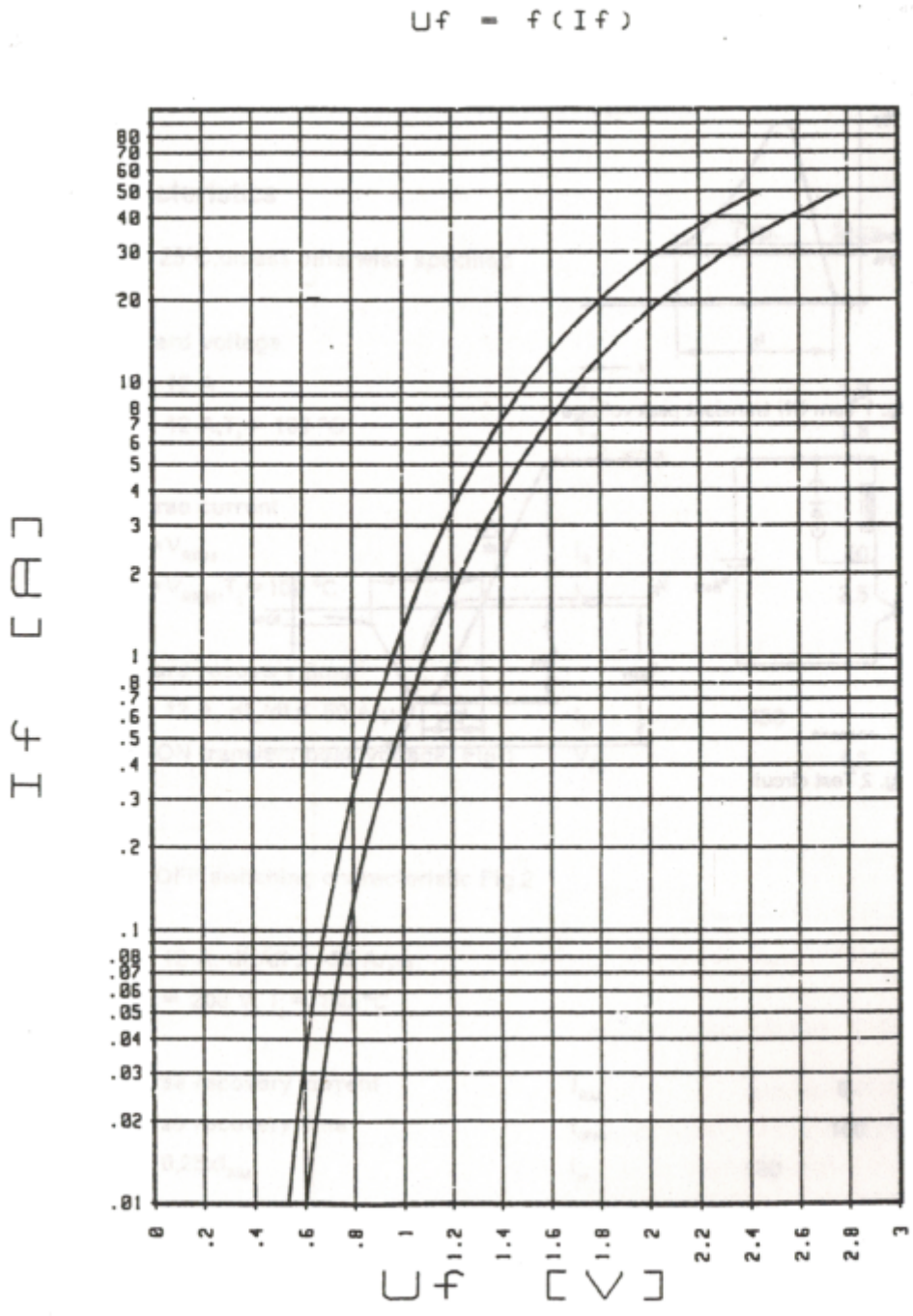
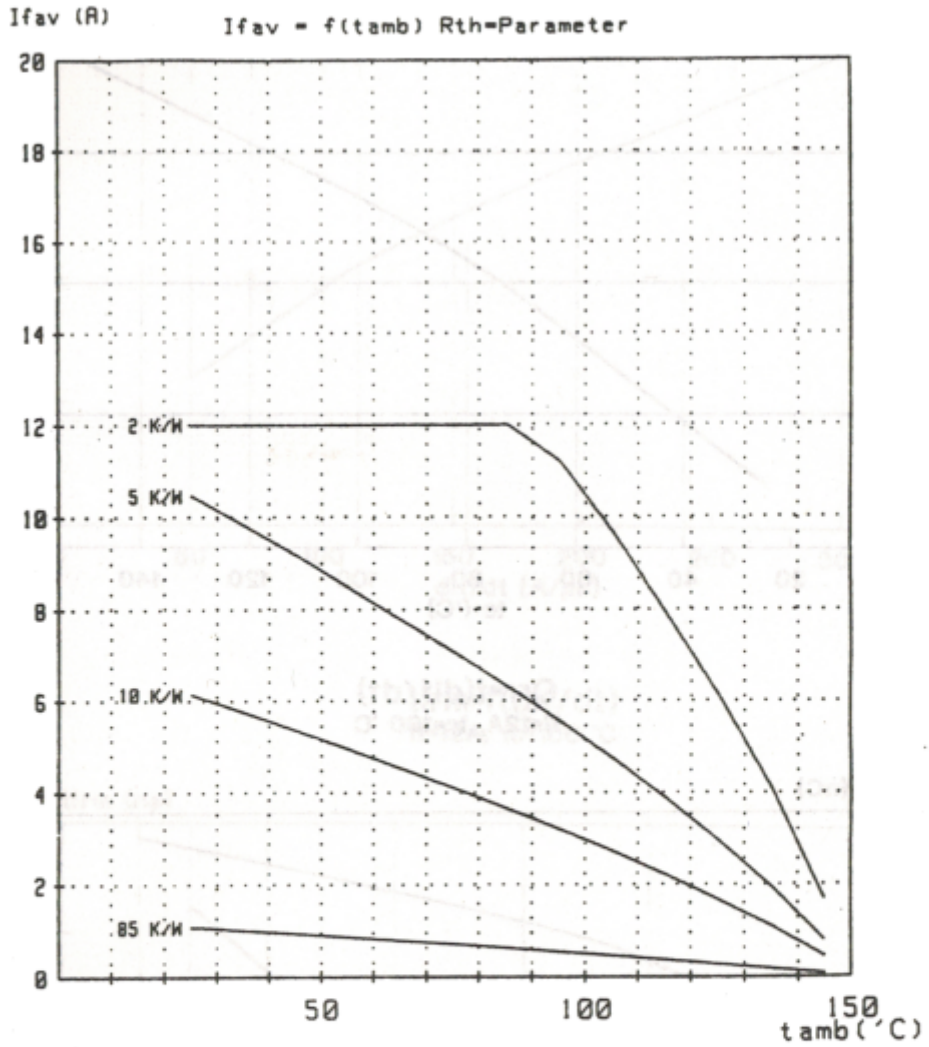
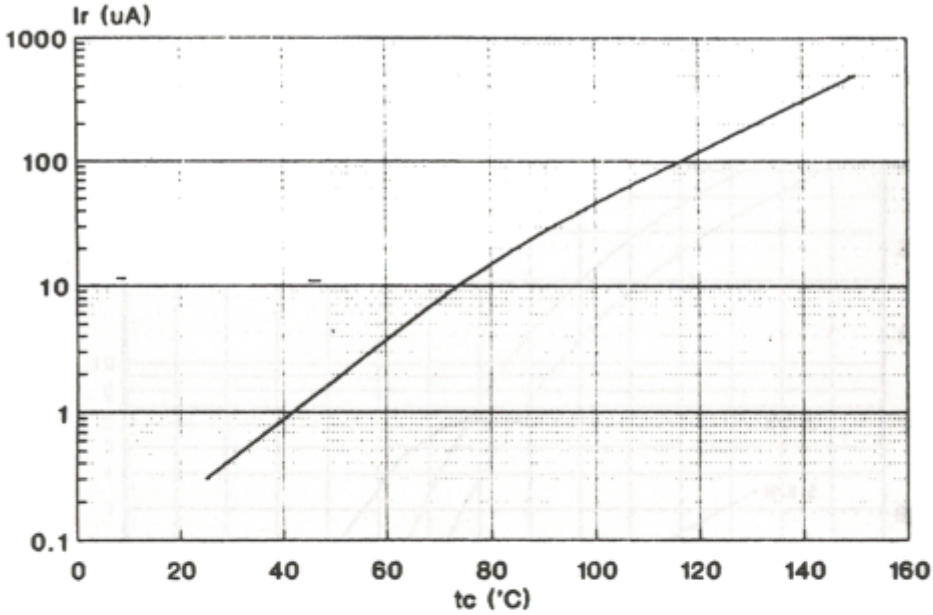


Fig. 2 Test circuit

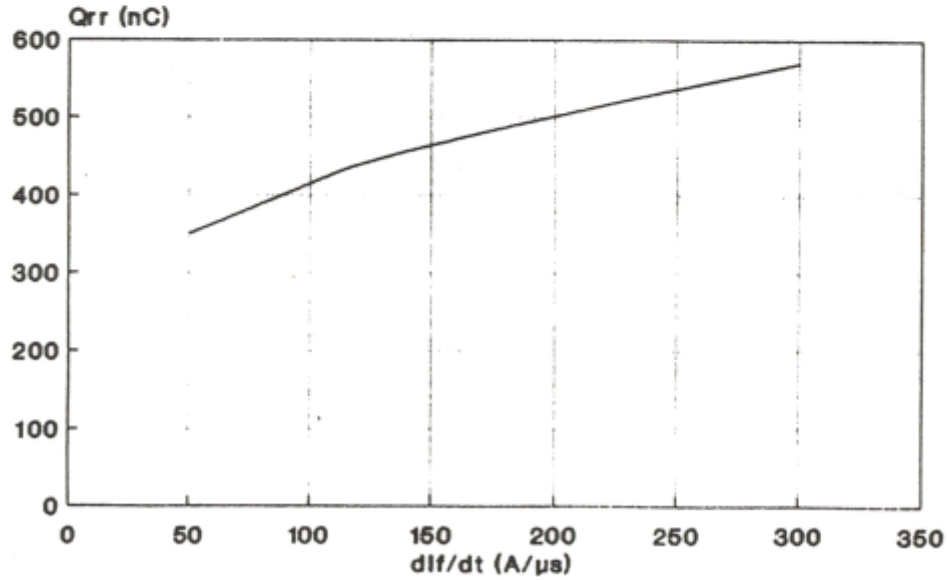

Uf = f(If)
If [A]
80
70
60
50
40
30
20
10
8
7
6
5
4
3
2
1
.8
.7
.6
.5
.4
.3
.2
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
.2
.4
.6
.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
Uf [V]

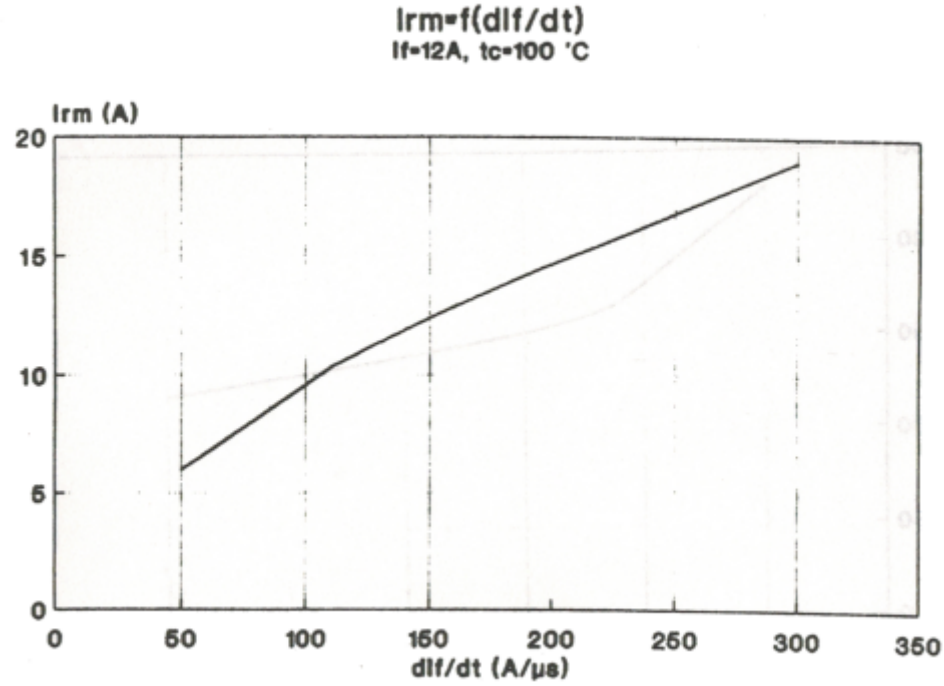

Ifav (A)
Ifav = f(tamb) Rth=Parameter
20
18
16
14
12
10
8
6
4
2
0
2 K/W
5 K/W
10 K/W
85 K/W
50
100
150
tamb(°C)

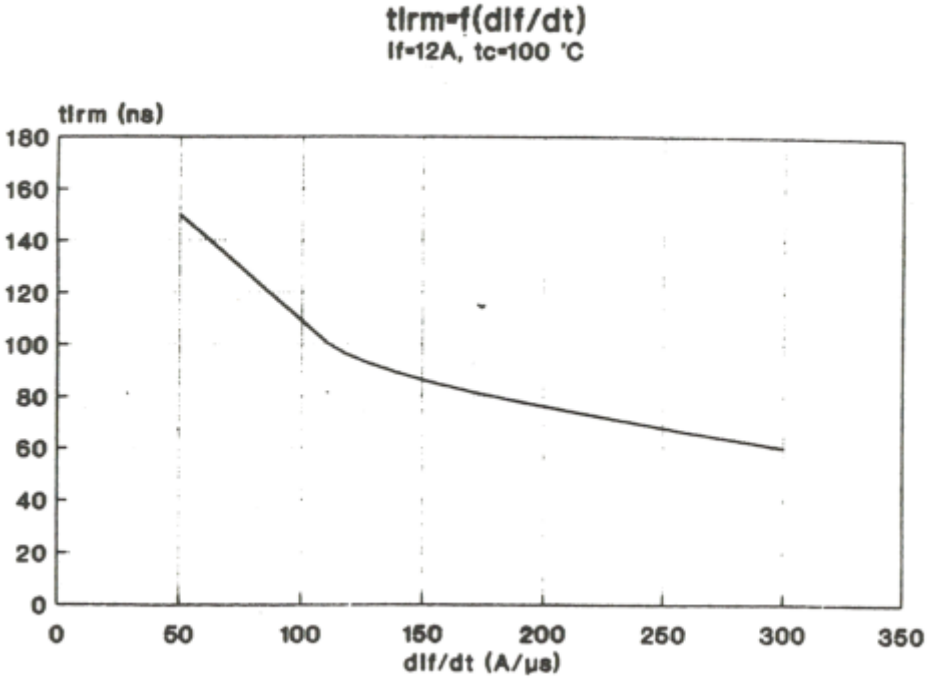
Ir=f(tc)

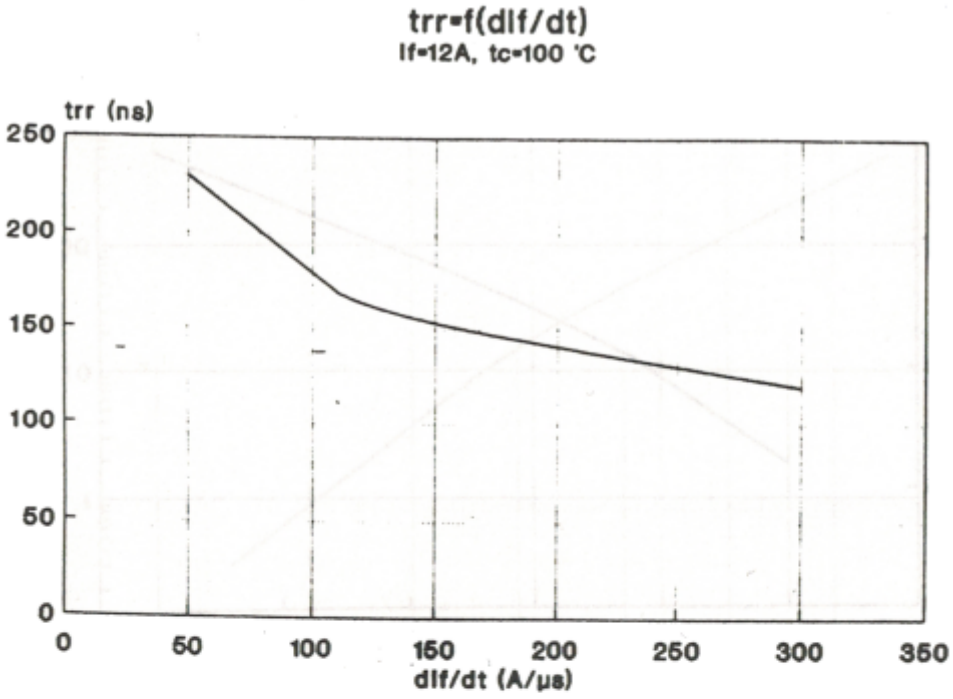


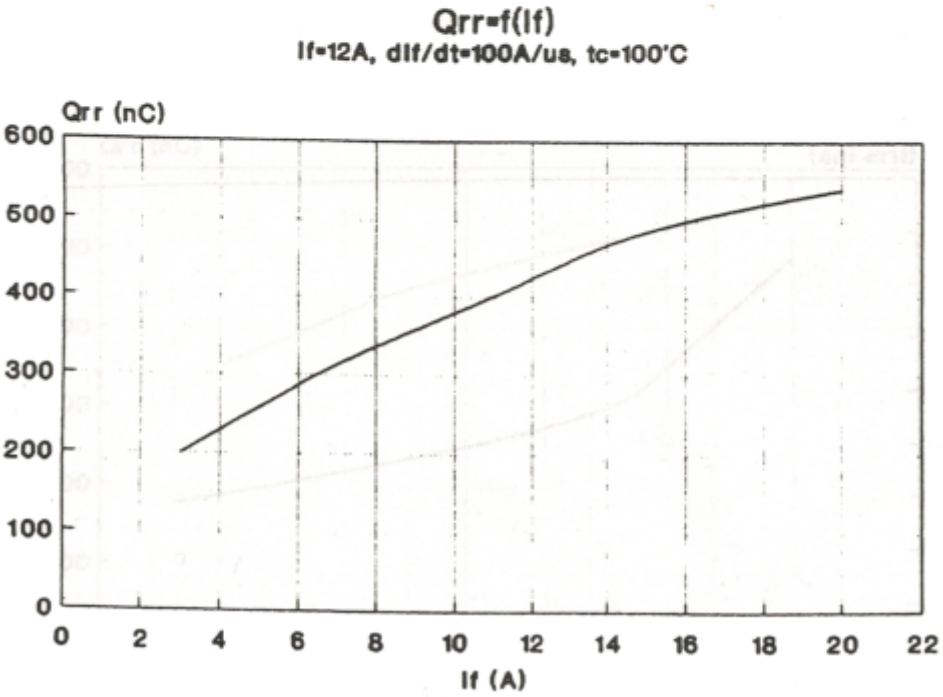
Qrr=f(dIf/dt)
If=12A, tc=100 °C




Irm=f(dIf/dt)
If=12A, tc=100 °C
Irm (A)
20
15
10
5
0
0
50
100
150
200
250
300
350
dIf/dt (A/µs)


tIrm=f(dIf/dt)
If=12A, tc=100 °C
tIrm (ns)
180
160
140
120
100
80
60
40
20
0
0
50
100
150
200
250
300
350
dIf/dt (A/µs)


trr=f(dIf/dt)
If=12A, tc=100 'C
trr (ns)
250
200
150
100
50
0
0
50
100
150
200
250
300
350
dIf/dt (A/µs)


Qrr=f(If)
If=12A, dIf/dt=100A/us, tc=100'C
Qrr (nC)
600
500
400
300
200
100
0
0
2
4
6
8
10
12
14
16
18
20
22
If (A)