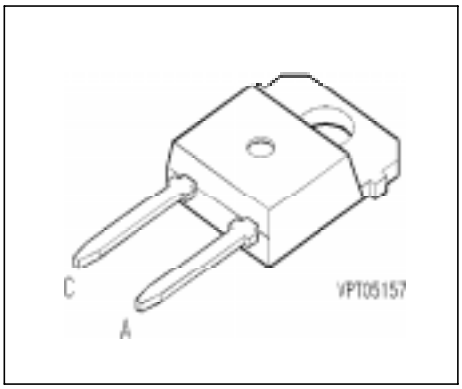
FRED Diode

- Fast recovery epitaxial diode
- Soft recovery characteristics



Type	V_{RRM}	I_{FRMS}	t_{rr}	Package	Ordering Code
BYP 102	1000V	50A	130ns	TO-218 AD	C67047-A2071-A2

Maximum Ratings

Parameter	Symbol	Values	Unit
Mean forward current T_C = 90 °C, D = 0.5	I_{FAV}	28	A
RMS forward current	I_{FRMS}	50	
Surge forward current, sine halfwave, aperiodic T_j = 100 °C, f = 50 Hz	I_{FSM}	125	
Repetitive peak forward current T_j = 100 °C, $t_p \leq 10$ µs	I_{FRM}	280	
i^2t value T_j = 100 °C, t_p = 10 ms	$\int i^2 dt$	78	A^2s
Repetitive peak reverse voltage	V_{RRM}	1000	V
Surge peak reverse voltage	V_{RSM}	1000	
Power dissipation T_C = 90 °C	P_{tot}	75	W
Chip or operating temperature	T_j	-40 ... + 150	°C
Storage temperature	T_{stg}	-40 ... + 150	

Thermal resistance, chip case	R_{thJC}	≤ 0.8	K/W
Thermal resistance, chip-ambient	R_{thJA}	≤ 46	
DIN humidity category, DIN 40 040	-	E	-
IEC climatic category, DIN IEC 68-1	-	40 / 150 / 56	

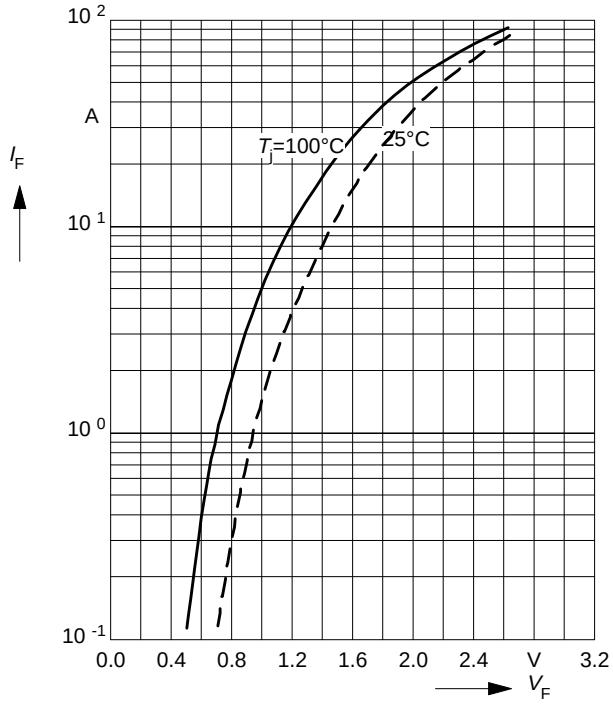
Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Forward voltage drop	V_F				V
I_F = 20 A, T_j = 25 °C		-	1.65	-	
I_F = 30 A, T_j = 25 °C		-	1.9	2.35	
I_F = 20 A, T_j = 100 °C		-	1.5	-	
I_F = 30 A, T_j = 100 °C		-	1.7	-	
Reverse current	I_R				mA
V_R = 1000 V, T_j = 25 °C		-	0.01	0.25	
V_R = 1000 V, T_j = 100 °C		-	0.05	-	
V_R = 1000 V, T_j = 150 °C		-	0.15	-	
AC Characteristics					
Reverse recovery charge	Q_{rr}				µC
I_F = 28 A, V_{CC} = 300 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	4.5	-	
Peak reverse recovery current	I_{RRM}				A
I_F = 28 A, V_{CC} = 300 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	50	-	
Reverse recovery time	t_{rr}				ns
I_F = 28 A, V_{CC} = 300 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	130	-	
Storage time	t_S				
I_F = 28 A, V_{CC} = 300 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	65	-	
Softfaktor	S				-
I_F = 28 A, V_{CC} = 300 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	1	-	

Typ. forward characteristics

$I_F = f(V_F)$

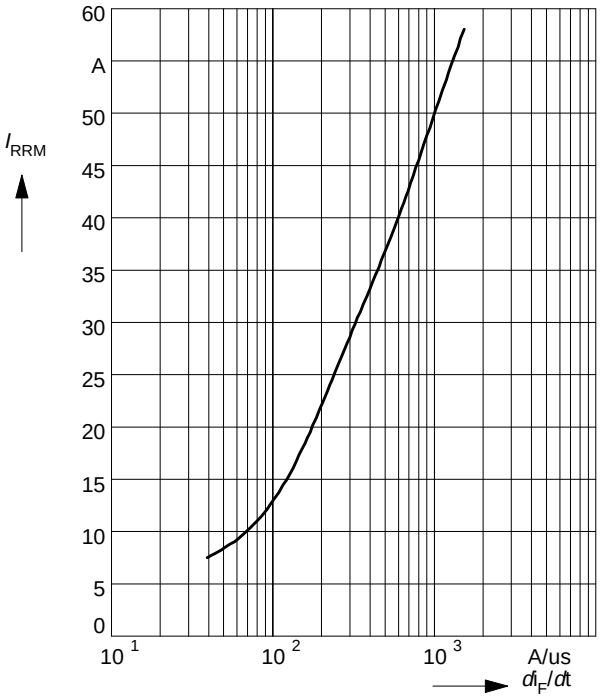
parameter: T_j



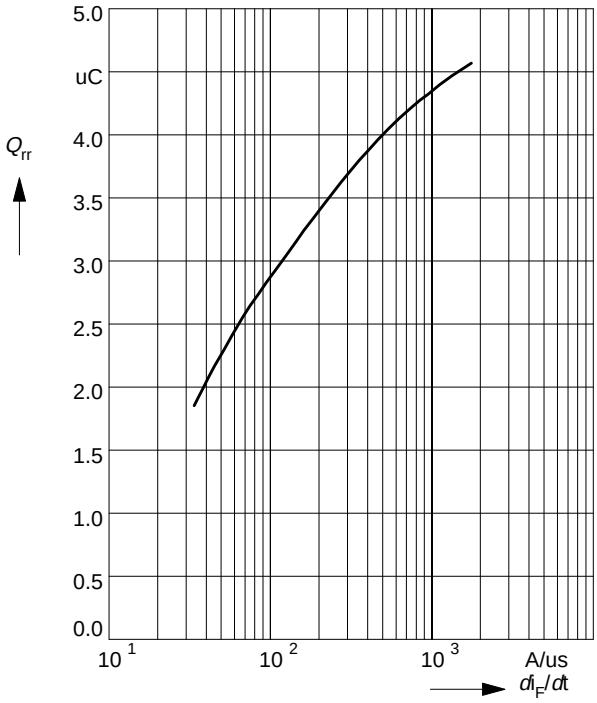
Typ. reverse current

I_{RRM} = f (di_F / dt)

parameter: V_{CC} = 300 V, I_F = 30 A, T_j = 100 °C



Typ. reverse recovery charge

Q_{rr} = f (di_F / dt)

parameter: V_{CC} = 300 V, I_F = 30 A, T_j = 100 °C