FRED Diode

• Fast recovery epitaxial diode

• Soft recovery characteristics
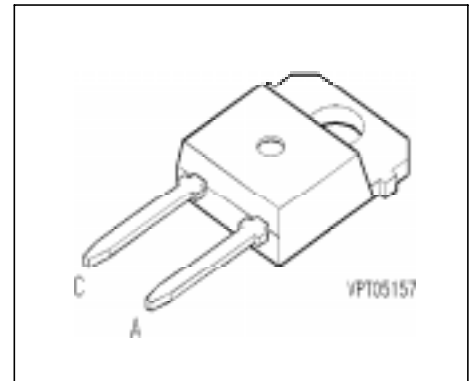
Type	V_{RRM}	I_{FRMS}	t_{rr}	Package	Ordering Code
BYP 301	1200V	20A	80ns	TO-218 AD	C67047-A2251-A2

Maximum Ratings

Parameter	Symbol	Values	Unit
Mean forward current $T_C = 90\ °C$, $D = 0.5$	I_{FAV}	12	A
RMS forward current	I_{FRMS}	20	
Surge forward current, sine halfwave, aperiodic $T_j = 100\ °C$, $f = 50$ Hz	I_{FSM}	50	
Repetitive peak forward current $T_j = 100\ °C$, $t_p \leq 10$ µs	I_{FRM}	110	
i^2t value $T_j = 100\ °C$, $t_p = 10$ ms	$\int i^2 dt$	13	A^2s
Repetitive peak reverse voltage	V_{RRM}	1200	V
Surge peak reverse voltage	V_{RSM}	1200	
Power dissipation $T_C = 90\ °C$	P_{tot}	40	W
Chip or operating temperature	T_j	-40 ... + 150	°C
Storage temperature	T_{stg}	-40 ... + 150	

Parameter	Symbol	Values	Unit
Thermal resistance, chip case	R_{thJC}	≤ 1.5	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 = 12 A, T_j = 25 °C		-	2.2	2.75	
I_F = 12 A, T_j = 100 °C		-	1.8	-	
Reverse current	I_R				mA
V_R = 1200 V, T_j = 25 °C		-	0.01	0.25	
V_R = 1200 V, T_j = 100 °C		-	0.05	-	
V_R = 1200 V, T_j = 150 °C		-	0.15	-	
AC Characteristics					
Reverse recovery charge	Q_{rr}				µC
I_F = 12 A, V_{CC} = 500 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	2.2	-	
Peak reverse recovery current	I_{RRM}				A
I_F = 12 A, V_{CC} = 500 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	35	-	
Reverse recovery time	t_{rr}				ns
I_F = 12 A, V_{CC} = 500 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	80	-	
Storage time	t_S				
I_F = 12 A, V_{CC} = 500 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	45	-	
Softfaktor	S				-
I_F = 12 A, V_{CC} = 500 V, di_F/dt = -1000 A/µs					
T_j = 100 °C		-	0.8	-	

Typ. forward characteristics

$I_F = f(V_F)$

parameter: T_j
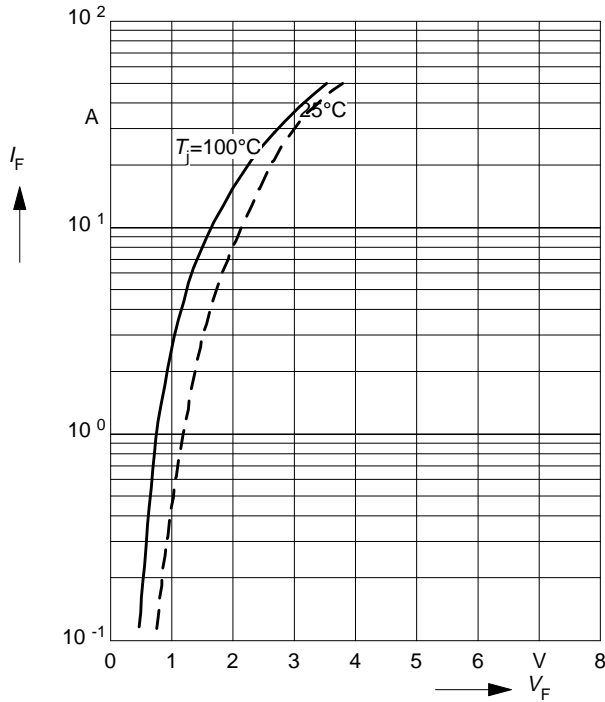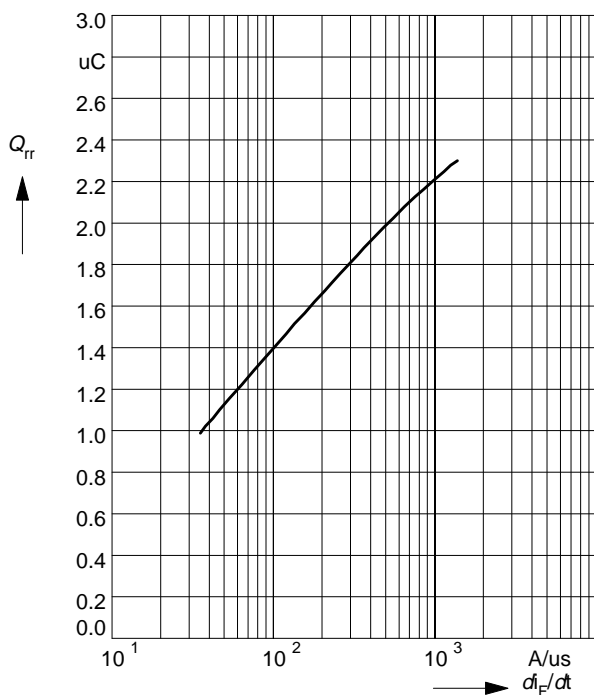

Typ. reverse current

$I_{RRM} = f(di_F / dt)$

parameter: $V_{CC} = 500$ V, $I_F = 12$ A, $T_j = 100$ °C
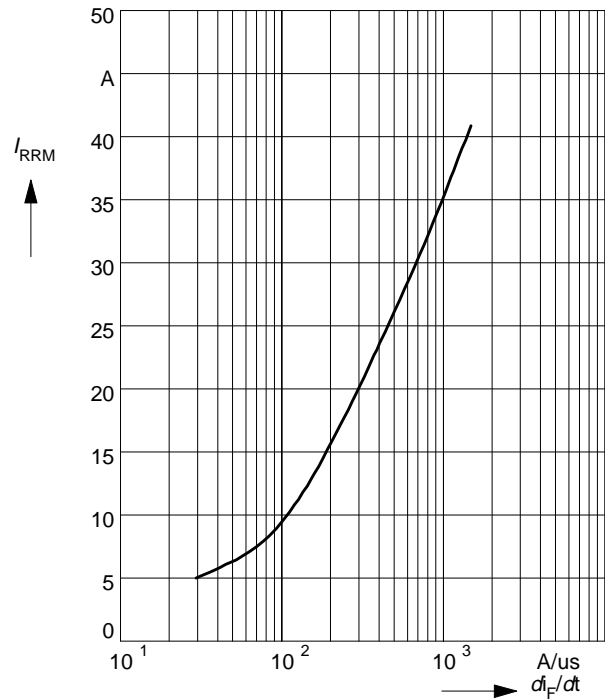
Typ. reverse recovery charge

$Q_{rr} = f(di_F / dt)$

parameter: $V_{CC} = 500$ V, $I_F = 12$ A, $T_j = 100$ °C