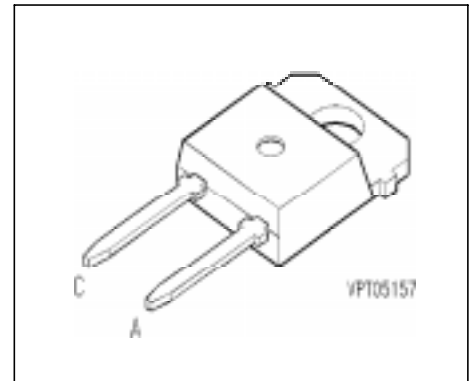


## FRED Diode

- 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 $T_C = 90\text{ °C}, D = 0.5$	$I_{FAV}$	12	A
RMS forward current	$I_{FRMS}$	20	
Surge forward current, sine halfwave, aperiodic $T_j = 100\text{ °C}, f = 50\text{ Hz}$	$I_{FSM}$	50	
Repetitive peak forward current $T_j = 100\text{ °C}, t_p \leq 10\text{ }\mu\text{s}$	$I_{FRM}$	110	
$i^2t$ value $T_j = 100\text{ °C}, t_p = 10\text{ ms}$	$\int I^2 dt$	13	A <sup>2</sup> s
Repetitive peak reverse voltage	$V_{RRM}$	1200	V
Surge peak reverse voltage	$V_{RSM}$	1200	
Power dissipation $T_C = 90\text{ °C}$	$P_{tot}$	40	W
Chip or operating temperature	$T_j$	-40 ... + 150	°C
Storage temperature	$T_{stg}$	-40 ... + 150	
Thermal resistance, chip case	$R_{thJC}$	$\leq 1.5$	K/W
Thermal resistance, chip-ambient	$R_{thJA}$	$\leq 46$	
DIN humidity category, DIN 40 040	-	E	-
IEC climatic category, DIN IEC 68-1	-	40 / 150 / 56	-

## Electrical Characteristics, at $T_j = 25\text{ °C}$ , unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

### Static Characteristics

Forward voltage drop $I_F = 12\text{ A}$ , $T_j = 25\text{ °C}$ $I_F = 12\text{ A}$ , $T_j = 100\text{ °C}$	$V_F$	-	2.2 1.8	2.75 -	V
Reverse current $V_R = 1200\text{ V}$ , $T_j = 25\text{ °C}$ $V_R = 1200\text{ V}$ , $T_j = 100\text{ °C}$ $V_R = 1200\text{ V}$ , $T_j = 150\text{ °C}$	$I_R$	-	0.01 0.05 0.15	0.25 - -	mA

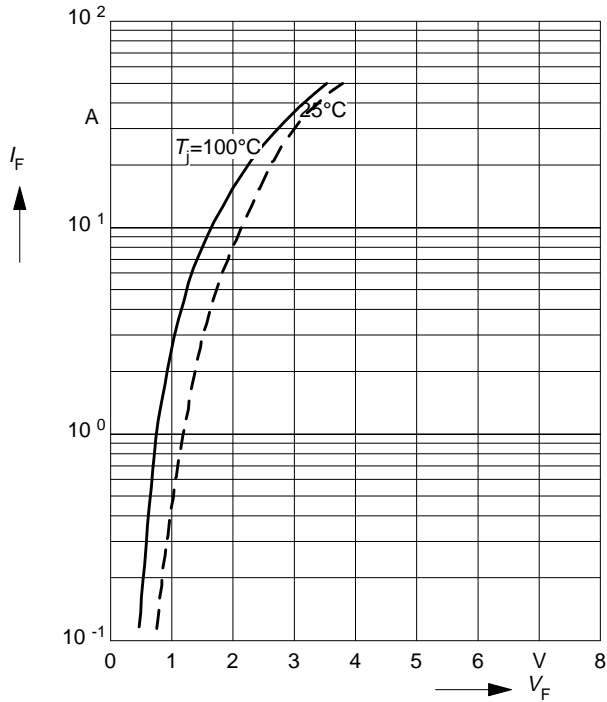
### AC Characteristics

Reverse recovery charge $I_F = 12\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$ $T_j = 100\text{ °C}$	$Q_{rr}$	-	2.2	-	$\mu\text{C}$
Peak reverse recovery current $I_F = 12\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$ $T_j = 100\text{ °C}$	$I_{RRM}$	-	35	-	A
Reverse recovery time $I_F = 12\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$ $T_j = 100\text{ °C}$	$t_{rr}$	-	80	-	ns
Storage time $I_F = 12\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$ $T_j = 100\text{ °C}$	$t_S$	-	45	-	
Softfaktor $I_F = 12\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$ $T_j = 100\text{ °C}$	S	-	0.8	-	-

### Typ. forward characteristics

$$I_F = f(V_F)$$

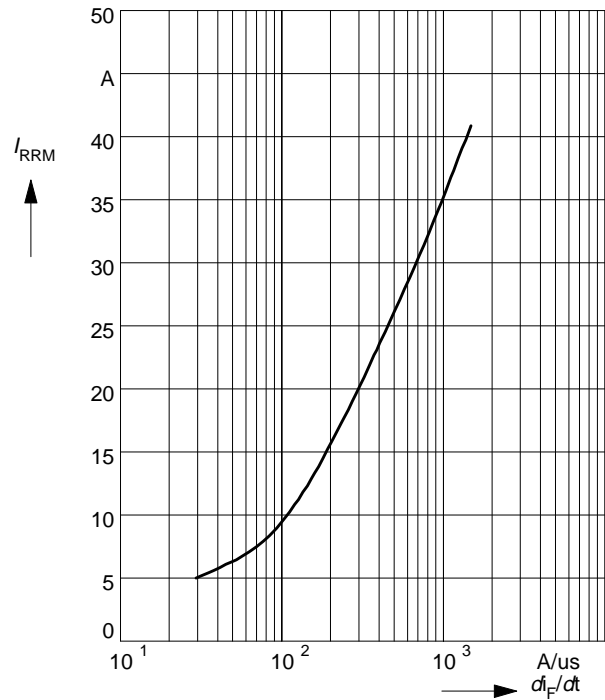
parameter:  $T_j$



### Typ. reverse current

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

parameter:  $V_{CC} = 500\text{ V}, I_F = 12\text{ A}, T_j = 100^\circ\text{C}$



### Typ. reverse recovery charge

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

parameter:  $V_{CC} = 500\text{ V}, I_F = 12\text{ A}, T_j = 100^\circ\text{C}$

