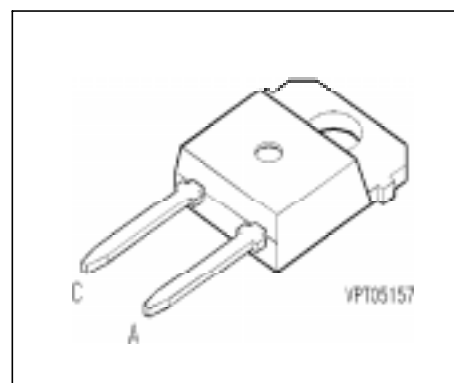


### FRED Diode

- Fast recovery epitaxial diode
- Soft recovery characteristics



Type	$V_{RRM}$	$I_{FRMS}$	$t_{rr}$	Package	Ordering Code
BYP 302	1200V	40A	130ns	TO-218 AD	C67047-A2252-A2

### Maximum Ratings

Parameter	Symbol	Values	Unit
Mean forward current $T_C = 90\text{ °C}, D = 0.5$	$I_{FAV}$	25	A
RMS forward current	$I_{FRMS}$	40	
Surge forward current, sine halfwave, aperiodic $T_j = 100\text{ °C}, f = 50\text{ Hz}$	$I_{FSM}$	115	
Repetitive peak forward current $T_j = 100\text{ °C}, t_p \leq 10\text{ }\mu\text{s}$	$I_{FRM}$	260	
$i^2t$ value $T_j = 100\text{ °C}, t_p = 10\text{ ms}$	$\int i^2 dt$	66	A <sup>2</sup> s
Repetitive peak reverse voltage	$V_{RRM}$	1200	V
Surge peak reverse voltage	$V_{RSM}$	1200	
Power dissipation $T_C = 90\text{ °C}$	$P_{tot}$	75	W
Chip or operating temperature	$T_j$	-40 ... + 150	°C
Storage temperature	$T_{stg}$	-40 ... + 150	
Thermal resistance, chip case	$R_{thJC}$	$\leq 0.8$	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	$V_F$				V
$I_F = 15\text{ A}$ , $T_j = 25\text{ °C}$		-	1.9	-	
$I_F = 25\text{ A}$ , $T_j = 25\text{ °C}$		-	2.2	2.7	
$I_F = 15\text{ A}$ , $T_j = 100\text{ °C}$		-	1.5	-	
$I_F = 25\text{ A}$ , $T_j = 100\text{ °C}$		-	1.8	-	
Reverse current	$I_R$				mA
$V_R = 1200\text{ V}$ , $T_j = 25\text{ °C}$		-	0.01	0.25	
$V_R = 1200\text{ V}$ , $T_j = 100\text{ °C}$		-	0.05	-	
$V_R = 1200\text{ V}$ , $T_j = 150\text{ °C}$		-	0.15	-	

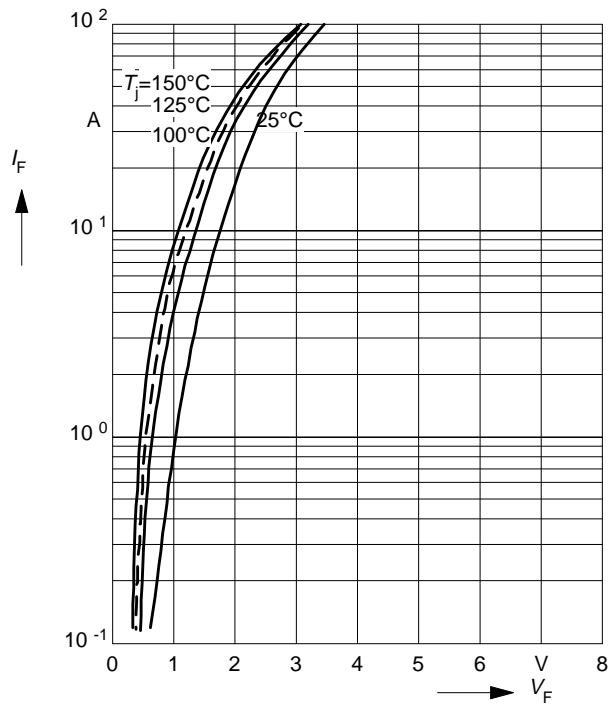
### AC Characteristics

Reverse recovery charge	$Q_{rr}$				$\mu\text{C}$
$I_F = 25\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$					
$T_j = 100\text{ °C}$		-	4.5	-	
Peak reverse recovery current	$I_{RRM}$				A
$I_F = 25\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$					
$T_j = 100\text{ °C}$		-	50	-	
Reverse recovery time	$t_{rr}$				ns
$I_F = 25\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$					
$T_j = 100\text{ °C}$		-	130	-	
Storage time	$t_S$				
$I_F = 25\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$					
$T_j = 100\text{ °C}$		-	65	-	
Softfaktor	$S$				-
$I_F = 25\text{ A}$ , $V_{CC} = 500\text{ V}$ , $dI_F/dt = -1000\text{ A}/\mu\text{s}$					
$T_j = 100\text{ °C}$		-	1	-	

## Typ. forward characteristics

$$I_F = f(V_F)$$

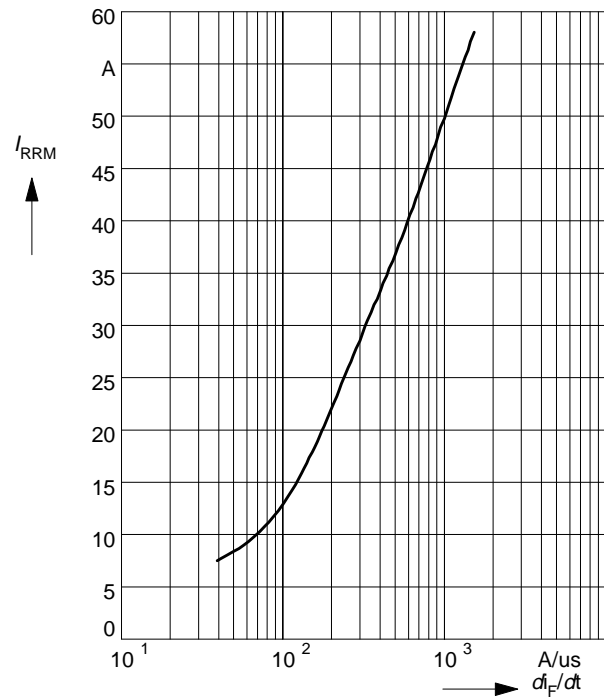
parameter:  $T_j$



## Typ. reverse current

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

parameter:  $V_{CC} = 500\text{ V}$ ,  $I_F = 25\text{ A}$ ,  $T_j = 100^\circ\text{C}$



## Typ. reverse recovery charge

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

parameter:  $V_{CC} = 500\text{ V}$ ,  $I_F = 25\text{ A}$ ,  $T_j = 100^\circ\text{C}$

