SCHOTTKY – BARRIER DOUBLE RECTIFIER DIODES

Low-leakage platinum-barrier double rectifier diodes in TO-244 envelopes, featuring low forward voltage drop, low capacitance, and absence of stored charge. They are intended for use in switched-mode power supplies and high-frequency circuits in general, where both low conduction losses and zero switching losses are important.
They can withstand reverse voltage transients and have guaranteed reverse avalanche surge capability. The series consists of common-catode types.

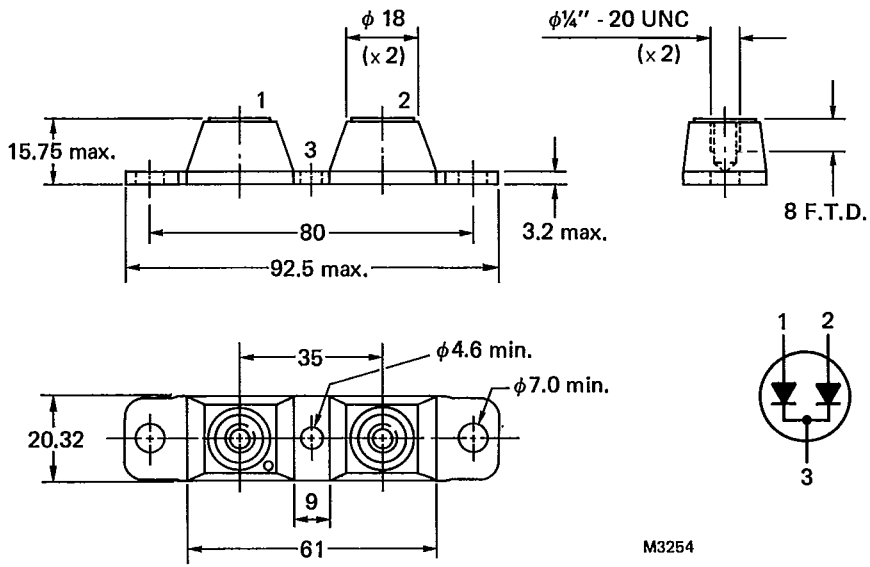
QUICK REFERENCE DATA

			PBYR30035	40	45 CT	
Repetitive peak reverse voltage	V_{RRM}	max.	35	40	45	V
Output current (both diodes conducting)	I_O	max.	300			A
Forward voltage	V_F	typ.	0.62			V
Junction temperature	T_j	max.	150			°C

MECHANICAL DATA

Dimensions in mm

Fig.1 TO-244.



Net mass: 73 g.

Terminal penetration:	7.0 mm max.
Terminal torque:	29 – 46 kg cm 25 – 40 lb in
Mounting base torque:	35 – 46 kg cm 30 – 40 lb in

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134).

			PBYR30035	40	45 CT	
Voltages (per diode)						
Repetitive peak reverse voltage	V_{RRM}	max.	35	40	45	V
Crest working reverse voltage	V_{RWM}	max.	35	40	45	V
Continuous reverse voltage	V_R	max.	35	40	45	V
Currents						
Average forward current squarewave; $\delta = 0.5$; up to $T_{mb} = 100\ ^oC$ (note 1)						
per diode	$I_{F(AV)}$	max.		150		A
per device	I_O	max.		300		A
Repetitive peak forward current per diode (note 1)						
$t_p = 20\ \mu s$; $\delta = 0.02$	I_{FRM}	max.		2500		A
Non-repetitive peak forward current half sinewave; $T_j = 125\ ^oC$ prior to surge; with reapplied V_{RWM} max						
t = 8.3 ms	I_{FSM}	max.		2500		A
t = 10 ms	I_{FSM}	max.		2000		A
I^2t for fusing (t = 10 ms; per device)	I^2t	max.		20000		A^2s
Reverse surge current (per diode)						
$t_p = 2\ \mu s$; $\delta = 0.001$	I_{RRM}	max.		2.0		A
$t_p = 100\ \mu s$	I_{RSM}	max.		2.0		A
Temperatures						
Storage temperature	T_{stg}			−65 to +175		^oC
Junction temperature	T_j	max.		150		^oC

CHARACTERISTICS (per diode)

Forward voltage (note 2)				
$I_F = 150$ A; $T_j = 150\ ^oC$	V_F	<	0.66	V
$I_F = 300$ A; $T_j = 125\ ^oC$	V_F	typ.	0.77	V
$I_F = 150$ A; $T_j = 125\ ^oC$	V_F	typ.	0.62	V
$I_F = 150$ A; $T_j = 25\ ^oC$	V_F	<	0.72	V
Reverse current				
$V_R = V_{RWM\ max}$; $T_j = 125\ ^oC$	I_R	<	300	mA
$V_R = V_{RWM\ max}$; $T_j = 25\ ^oC$	I_R	<	4.0	mA

THERMAL RESISTANCE

Junction to mounting-base (per diode)	$R_{th\ j\text{-}mb}$	<	0.4	K/W

Notes:

1. Assuming no reverse leakage losses.
2. Measured under pulse conditions to avoid excessive dissipation.

SQUAREWAVE OPERATION (Figs.3 and 4)

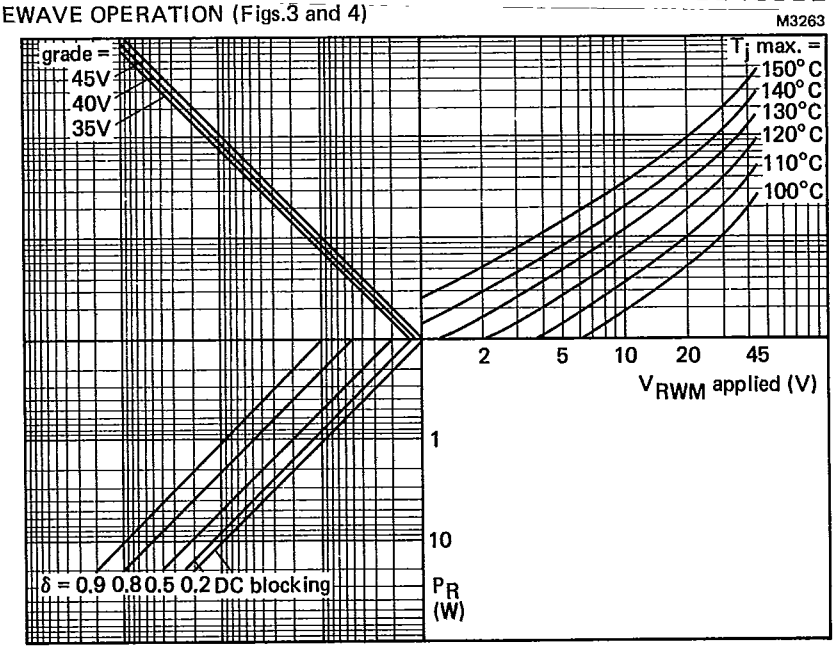
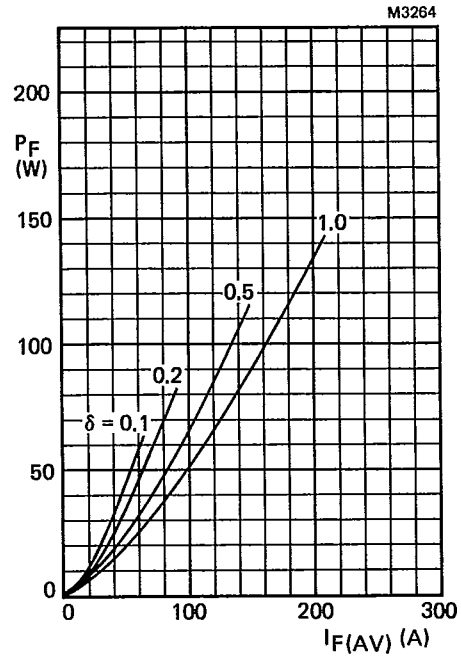
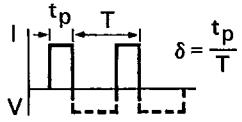


Fig.3 NOMOGRAM: for calculation of P_R (reverse leakage power dissipation) for a given T_j max., V_{RWM} applied, voltage grade and duty cycle; per diode.





$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$

Fig.4 Forward current power rating; per diode.

DEVELOPMENT DATA

SINUSOIDAL OPERATION (Figs.5 and 6)

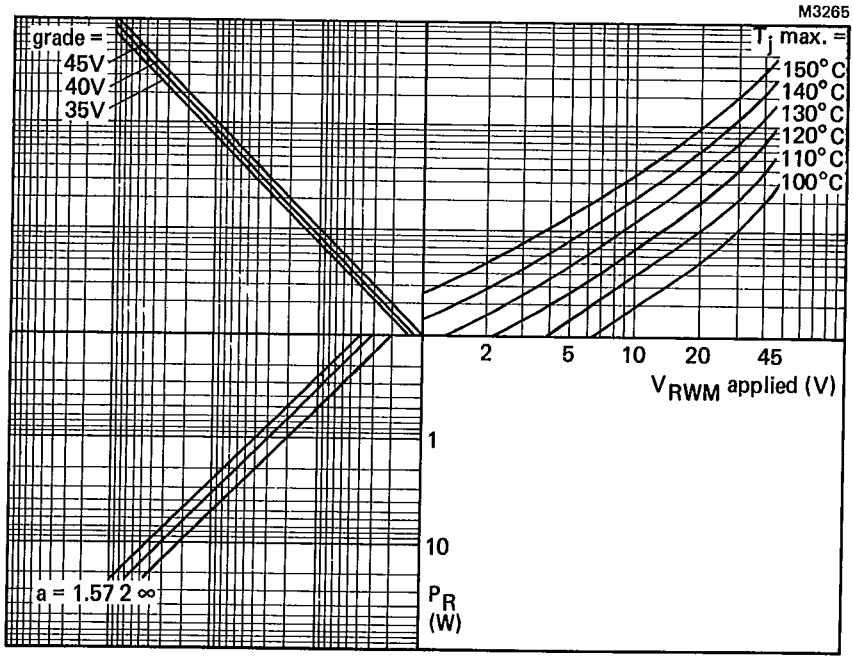


Fig.5 NOMOGRAM: for calculation of P_R (reverse leakage power dissipation) for a given T_j max., V_{RWM} applied, voltage grade and form factor; per diode.
a = form factor = $I_{F(RMS)}/I_{F(AV)}$.

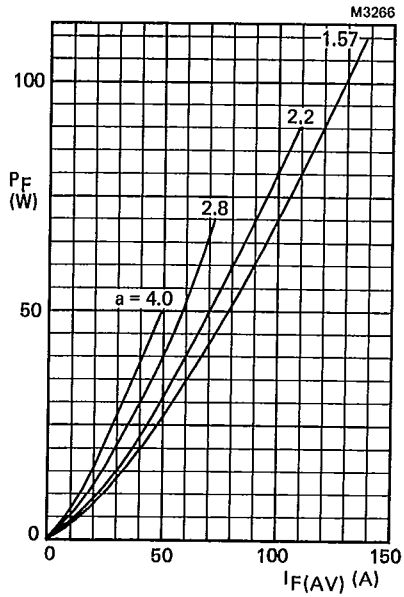


Fig.6 Forward current power rating, per diode.

DEVELOPMENT DATA

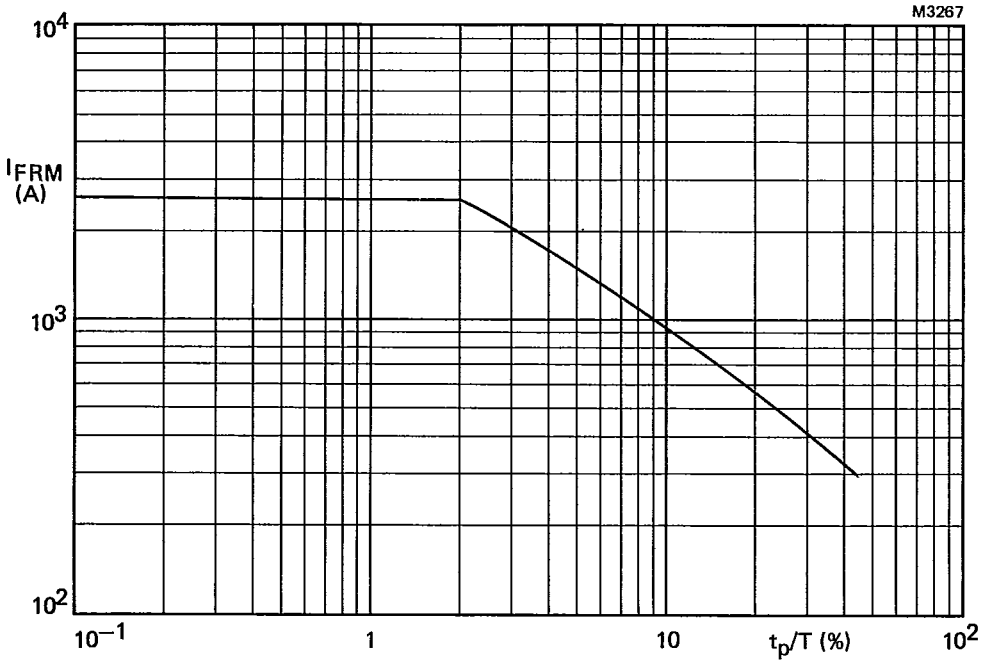


Fig.7 Maximum permissible repetitive peak forward current for either square or sinusoidal current for $1\ \mu s < t_p < 1$ ms; per diode.

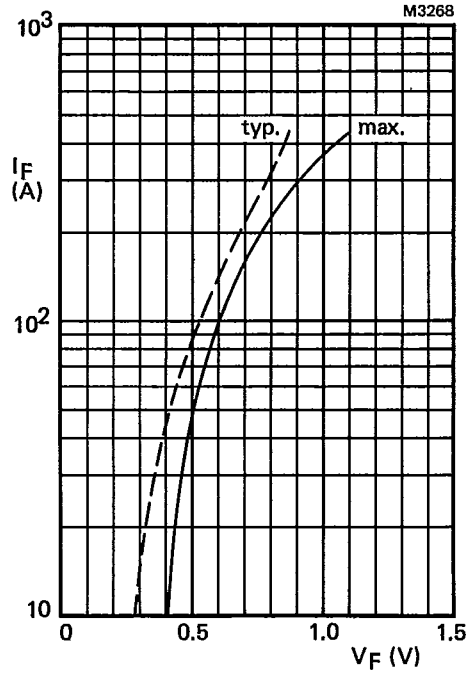
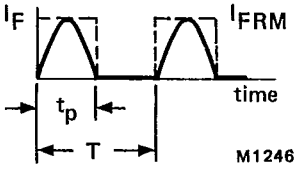


Fig.8 Forward voltage; per diode;
—— T_j = 25 °C; – – – T_j = 125 °C.



Definition of I_{FRM} and t_p/T.

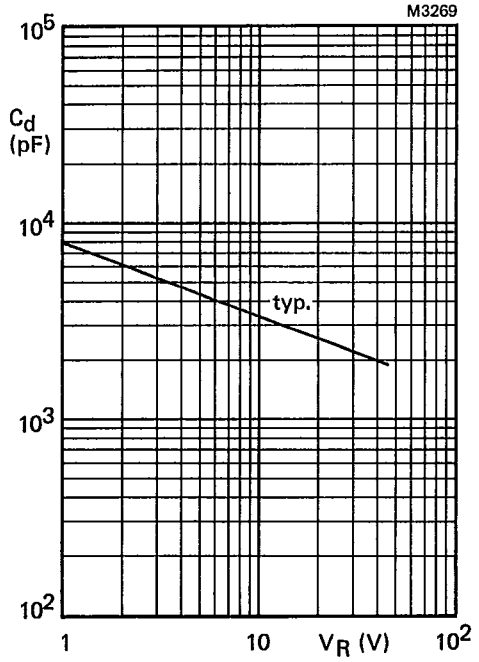


Fig.9 f = 1 MHz; T_j = 25 to 125 °C; per diode.

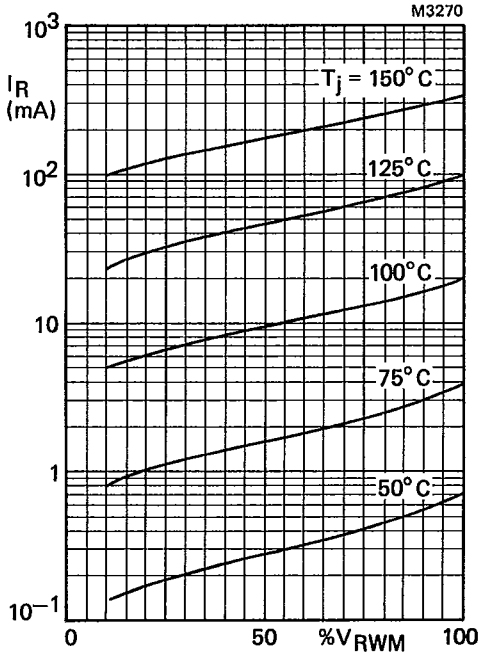


Fig.10 Typical values; per diode.