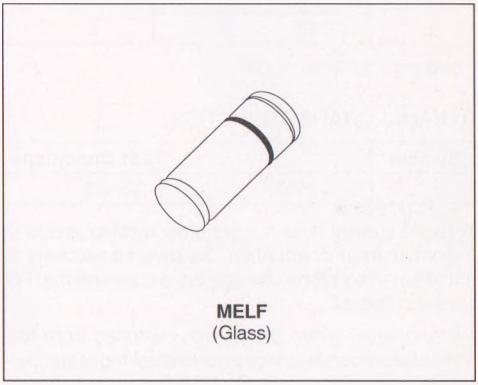
SGS-THOMSON MICROELECTRONICS

TMBYV 10-20A

SMALL SIGNAL SCHOTTKY DIODE



MELF
(Glass)

DESCRIPTION

Metal to silicon rectifier diode in glass case featuring very low forward voltage drop and fast recovery time, intended for low voltage switching mode power supply, polarity protection and high frequency circuits.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		20	V
$I_{F(AV)}$	Average Forward Current	T_l = 60°C	1	A
I_{FSM}	Surge non Repetitive Forward Current	T_l = 25°C t_p = 10ms	25 Sinusoidal Pulse	A
		T_l = 25°C t_p = 300µs	50 Rectangular Pulse	
T_{stg} T_j	Storage and Junction Temperature Range		– 65 to 150 – 65 to 125	°C °C
T_L	Maximum Lead Temperature for Soldering during 15s		260	°C

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction-leads	110	°C/W

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R*	T_j = 25°C	$V_R = V_{RRM}$			0.3	mA
	T_j = 100°C				10	
V_F*	I_F = 1A	T_j = 25°C			0.45	V
	I_F = 3A				0.75	

* Pulse test : $t_p \leq 300\mu s$ $\delta < 2\%$.

DYNAMIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
C	T_j = 25°C	V_R = 0		330		pF

Forward current flow in a schottky rectifier is due to majority carrier conduction. So reverse recovery is not affected by stored charge as in conventional PN junction diodes.

Nevertheless, when the device switches from forward biased condition to reverse blocking state, current is required to charge the depletion capacitance of the diode.

This current depends only of diode capacitance and external circuit impedance. Satisfactory circuit behaviour analysis may be performed assuming that schottky rectifier consists of an ideal diode in parallel with a variable cpacitance equal to the junction capacitance (see fig. 5 page 4/4).

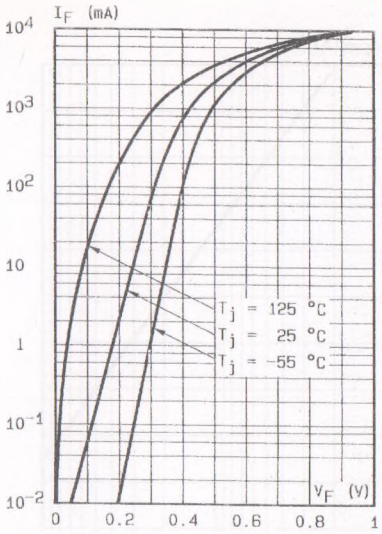


Fig.1 - Forward current versus forward voltage at low level (typical values).

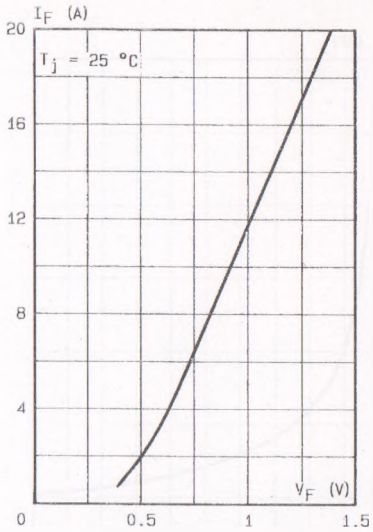


Fig.2 - Forward current versus forward voltage at high level (typical values).

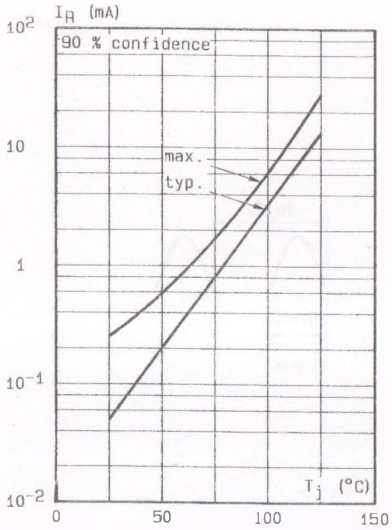


Fig.3 - Reverse current versus junction temperature.

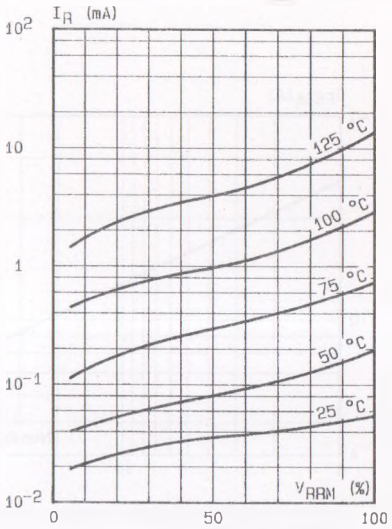


Fig.4 - Reverse current versus V_{RRM} in per cent.

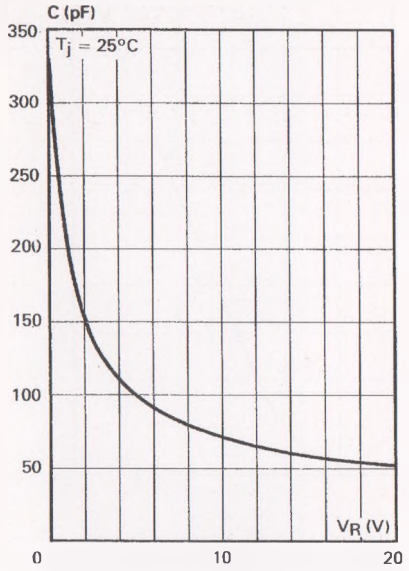


Fig.5 - Capacitance C versus reverse applied voltage V_R (typical values)

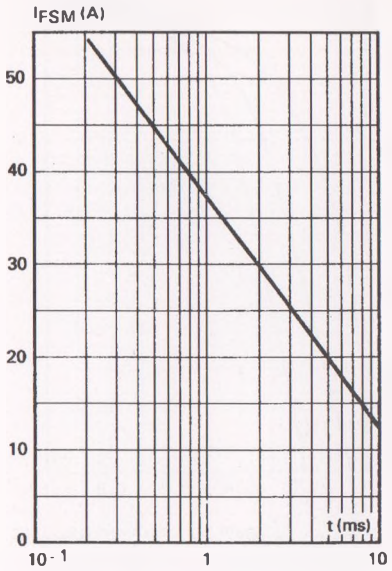


Fig.6 - Surge non repetitive forward current for a rectangular pulse with t ≤ 10 ms.

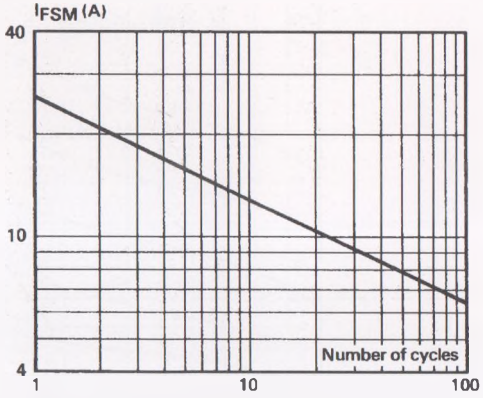


Fig.7 - Surge non repetitive forward current versus number of cycles.