

Description

General purpose metal to silicon diode featuring very low turn-on voltage and fast switching.

These devices have integrated protection against excessive voltage such as electrostatic discharges.

Features

- Very small conduction losses
- Negligible switching losses
- Low forward voltage drop

1 Characteristics

Table 1. Absolute maximum ratings at 25 °C unless otherwise specified

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		30	V
I_F	Forward continuous current	$T_I = 25\text{ °C}$	200	mA
I_{FRM}	Repetitive peak forward current	$t_p \leq 1\text{ s}$ $\delta \leq 0.5$	500	mA
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms}$	4	A
P_{tot}	Power dissipation	$T_I = 65\text{ °C}$	200	mW
T_{stg}	Storage temperature range		-65 to + 150	°C
T_j	Operating junction temperature range		-65 to + 125	°C
T_L	Maximum temperature for soldering during 15 s		260	°C

Table 2. Thermal resistance

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to leads	300	°C/W

Table 3. Static electrical characteristics

Symbol	Test conditions		Min.	Typ.	Max.	Unit
V_{BR}	$T_j = 25\text{ °C}; I_R = 100\text{ }\mu\text{A}$		30	-		V
$V_F^{(1)}$	$T_j = 25\text{ °C}; I_F = 200\text{ mA}$	All types		-	1	V
	$T_j = 25\text{ °C}; I_F = 10\text{ mA}$	TMMBAT42FILM		-	0.4	
	$T_j = 25\text{ °C}; I_F = 50\text{ mA}$			-	0.65	
	$T_j = 25\text{ °C}; I_F = 2\text{ mA}$	TMMBAT43FILM	0.26	-	0.33	
	$T_j = 25\text{ °C}; I_F = 15\text{ mA}$			-	0.45	
$I_R^{(1)}$	$T_j = 25\text{ °C}, V_R = 25\text{ V}$			-	0.5	μA
	$T_j = 100\text{ °C}, V_R = 25\text{ V}$			-	100	

1. Pulse test: $t_p = 380\text{ }\mu\text{s}$ $\delta < 2\%$

Table 4. Dynamic characteristics

Symbol	Test conditions	Min.	Typ.	Max.	Unit
C	$T_j = 25\text{ °C}; V_R = 1\text{ V}; f = 1\text{ MHz}$		7		pF
t_{rr}	$T_j = 25\text{ °C}; I_F = 10\text{ mA}; I_R = 10\text{ mA}; I_{RR} = 1\text{ mA}$ $R_L = 100\text{ }\Omega$			5	ns

Figure 1. Forward voltage drop versus forward current (typical values, high level)

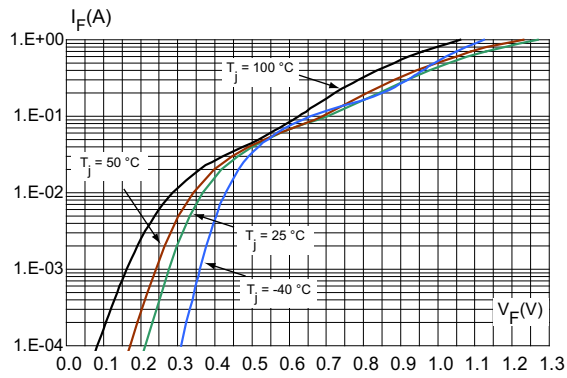


Figure 2. Forward voltage drop versus forward current (typical values)

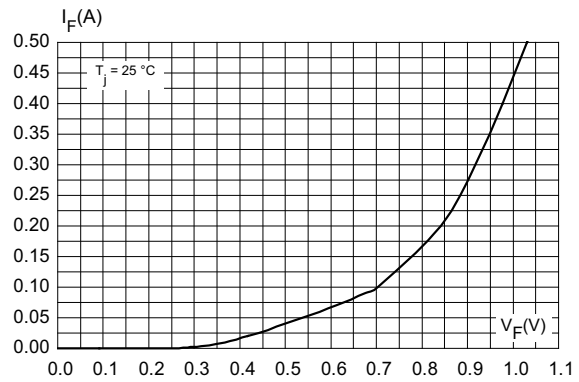


Figure 3. Leakage current versus reverse voltage applied (typical values)

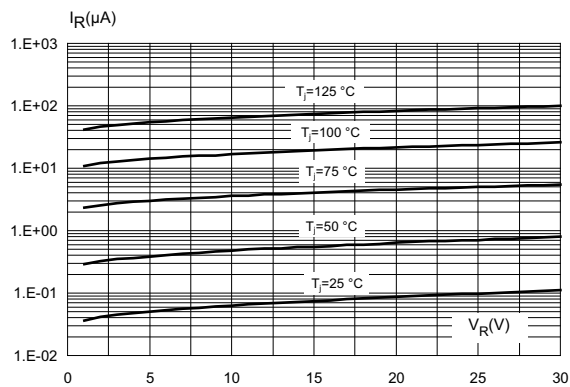
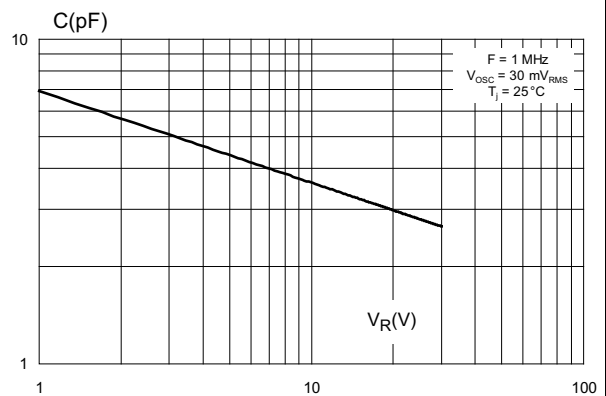


Figure 4. Junction capacitance versus reverse voltage applied (typical values)



2 Package information

- Ring at cathode end.

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: www.st.com. ECOPACK[®] is an ST trademark.

2.1 MINIMELF package information

Figure 5. MINIMELF package outline

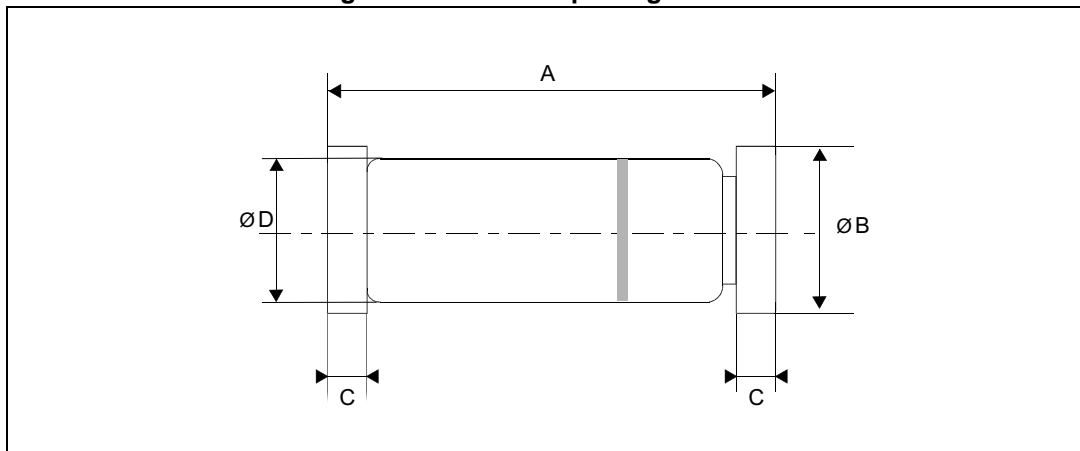
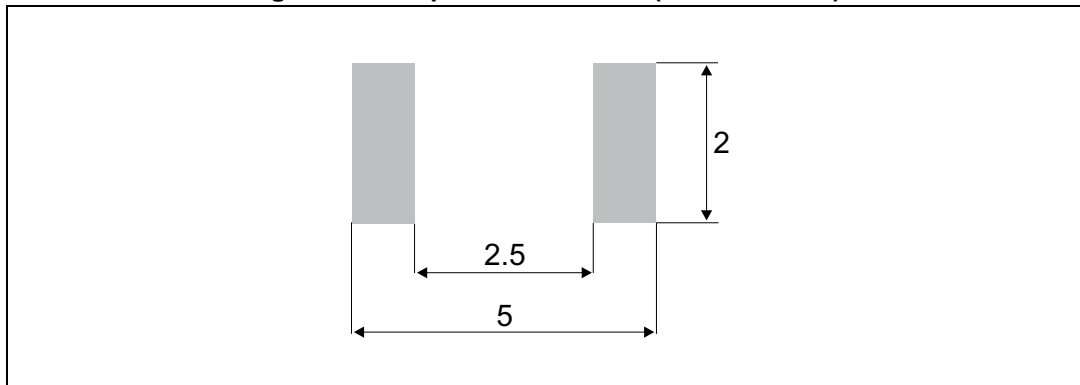


Table 5. MINIMELF mechanical data

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	3.30	3.50	3.70	0.130	0.138	0.146
ØB	1.59	1.65	1.70	0.063	0.065	0.069
C	0.40	0.50	0.60	0.016	0.020	0.024
ØD		1.50			0.059	

Figure 6. Foot print dimensions (in millimeters)



3 Ordering information

Table 6. Ordering information

Order code	Package	Weight	Base qty	Delivery mode
TMMBAT42FILM	MINIMELF	40 mg	2500	Tape and reel
TMMBAT43FILM				

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
Aug-1999	1A	Last issue.
31-Jul-2014	2	Reformatted to current standards. Added ordering information.
27-Jul-2015	3	Updated MINIMELF package information and reformatted to current standard. Updated Figure 1 , Figure 2 , Figure 3 , and Figure 4 .

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