

### 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**

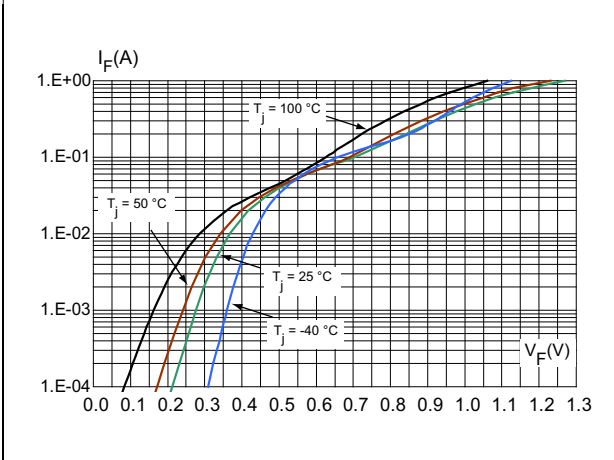
Symbol	Test conditions		Min.	Typ.	Max.	Unit
$V_{BR}$	$T_j = 25\text{ °C}; I_R = 100\text{ }\mu\text{A}$		30	-		V
$V_F^{(1)}$	$T_j = 25\text{ °C}; I_F = 200\text{ mA}$	All types		-	1	V
	$T_j = 25\text{ °C}; I_F = 10\text{ mA}$	TMMBAT42FILM		-	0.4	
	$T_j = 25\text{ °C}; I_F = 50\text{ mA}$			-	0.65	
	$T_j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

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

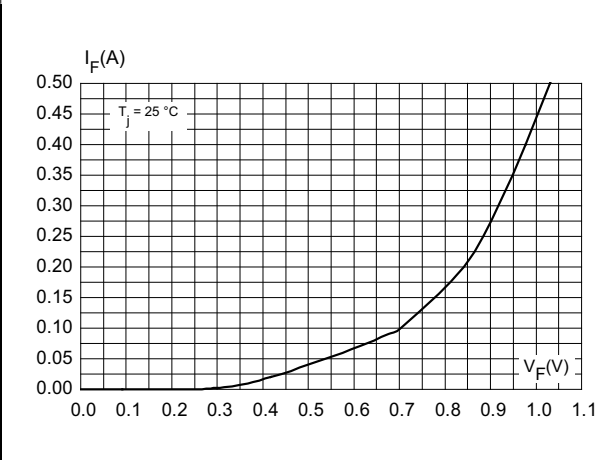
**Table 4. Dynamic characteristics**

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

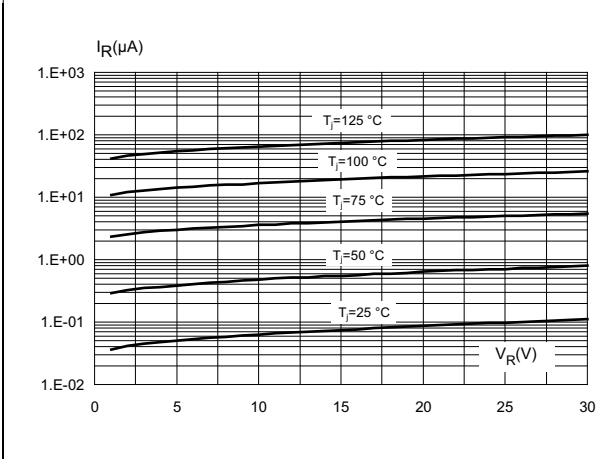
**Figure 1. Forward voltage drop versus forward current (typical values, high level)**



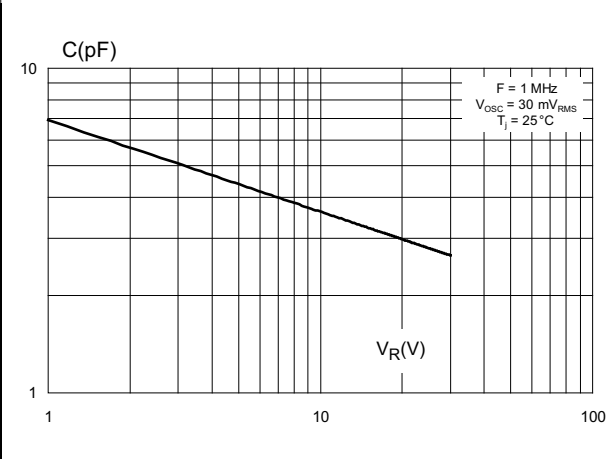
**Figure 2. Forward voltage drop versus forward current (typical values)**



**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](http://www.st.com). ECOPACK® is an ST trademark.

### 2.1 MINIMELF package information

Figure 5. MINIMELF package outline

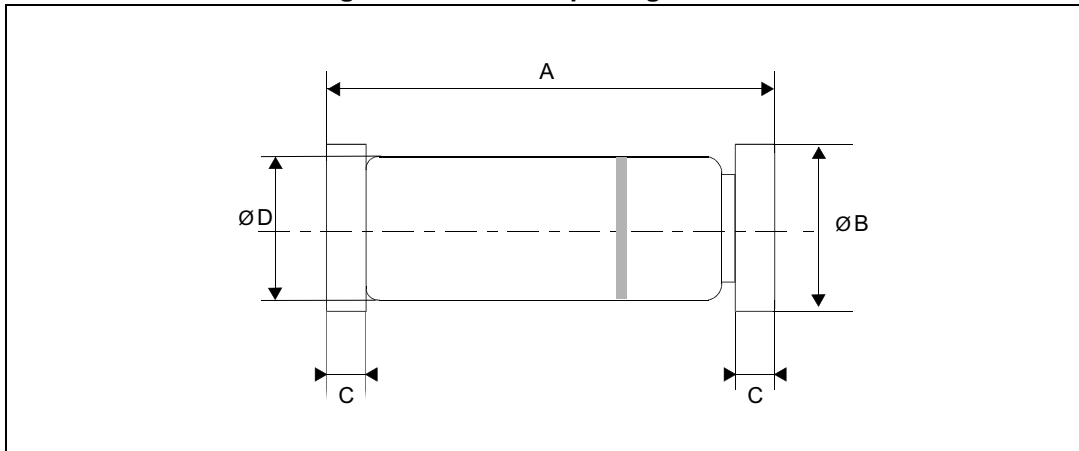
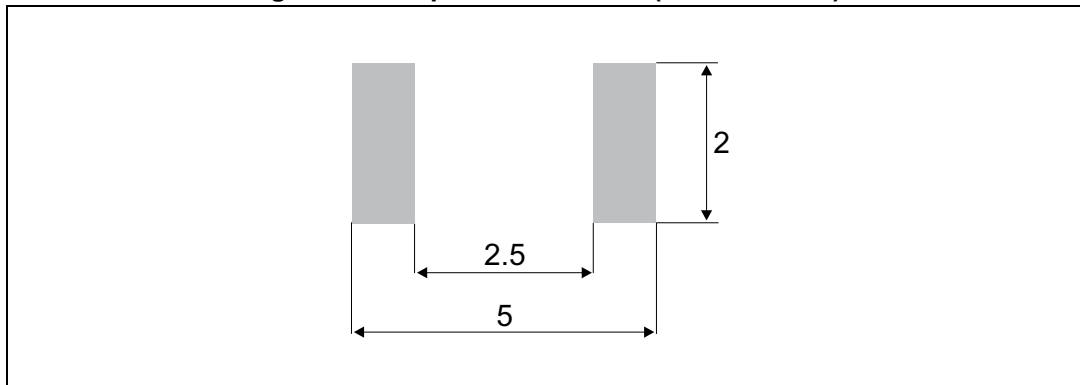


Table 5. MINIMELF mechanical data

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 <a href="#">Figure 1</a> , <a href="#">Figure 2</a> , <a href="#">Figure 3</a> , and <a href="#">Figure 4</a> .

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