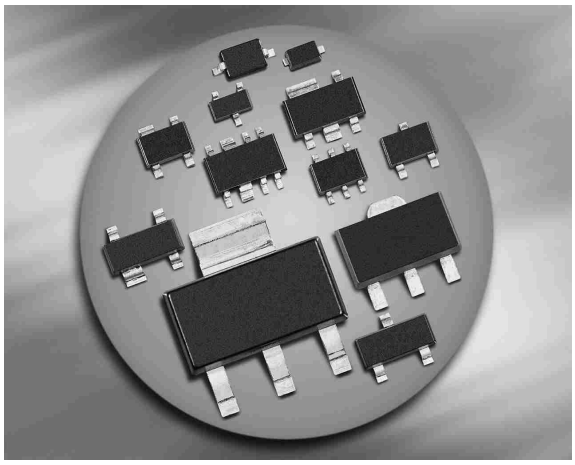
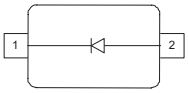
**Silicon PIN Diodes**

- PIN diode for high speed switching of RF signals
- Very low forward resistance (low insertion loss)
- Very low capacitance (high isolation)
- For frequencies up to 3GHz
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101[1)]

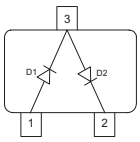


AEC Qualified RoHS

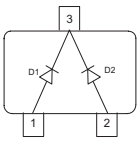
**BAR63-02..**
**BAR63-03W**



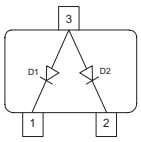

**BAR63-04**
**BAR63-04W**




**BAR63-05**
**BAR63-05W**




**BAR63-06**
**BAR63-06W**




| Type | Package | Configuration | $L_S$(nH) | Marking |
|---|---|---|---|---|
| BAR63-02L* | TSLP-2-1 | single, leadless | 0.4 | G |
| BAR63-02V | SC79 | single | 0.6 | G |
| BAR63-02W | SCD80 | single | 0.6 | GG |
| BAR63-03W | SOD323 | single | 1.8 | white G |
| BAR63-04 | SOT23 | series | 1.8 | G4s |
| BAR63-04W | SOT323 | series | 1.4 | G4s |
| BAR63-05 | SOT23 | common cathode | 1.8 | G5s |
| BAR63-05W | SOT323 | common cathode | 1.4 | G5s |
| BAR63-06 | SOT23 | common anode | 1.8 | G6s |
| BAR63-06W | SOT323 | common anode | 1.4 | G6s |

[1)]*BAR63-02L is not qualified according AEC Q101

**Maximum Ratings** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Diode reverse voltage | $V_R$ | 50 | V |
| Forward current | $I_F$ | 100 | mA |
| Total power dissipation | $P_{tot}$ | | mW |
| BAR63-02L, $T_S \leq 118$°C | | 250 | |
| BAR63-02V, -02W, BAR63-03W, $T_S \leq 115$°C | | 250 | |
| BAR63-04...BAR63-06, $T_S \leq 55$°C | | 250 | |
| BAR63-04S, $T_S \leq 115$°C | | 250 | |
| BAR63-04W...BAR63-06W, $T_S \leq 105$°C | | 250 | |
| Junction temperature | $T_j$ | 150 | °C |
| Operating temperature range | $T_{op}$ | -55 ... 125 | |
| Storage temperature | $T_{stg}$ | -55 ... 150 | |

**Thermal Resistance**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Junction - soldering point[1)] | $R_{thJS}$ | | K/W |
| BAR63-02L | | ≤ 125 | |
| BAR63-02V, BAR63-02W | | ≤ 140 | |
| BAR63-03W | | ≤ 155 | |
| BAR63-04...BAR63-06 | | ≤ 380 | |
| BAR63-04S | | ≤ 180 | |
| BAR63-04W...BAR63-06W | | ≤ 180 | |

**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC Characteristics** | | | | | |
| Breakdown voltage<br>$I_{(BR)}$ = 5 µA | $V_{(BR)}$ | 50 | - | - | V |
| Reverse current<br>$V_R$ = 35 V | $I_R$ | - | - | 10 | nA |
| Forward voltage<br>$I_F$ = 100 mA | $V_F$ | - | 0.95 | 1.2 | V |

[1]For calculation of $R_{thJA}$ please refer to the Technical Information

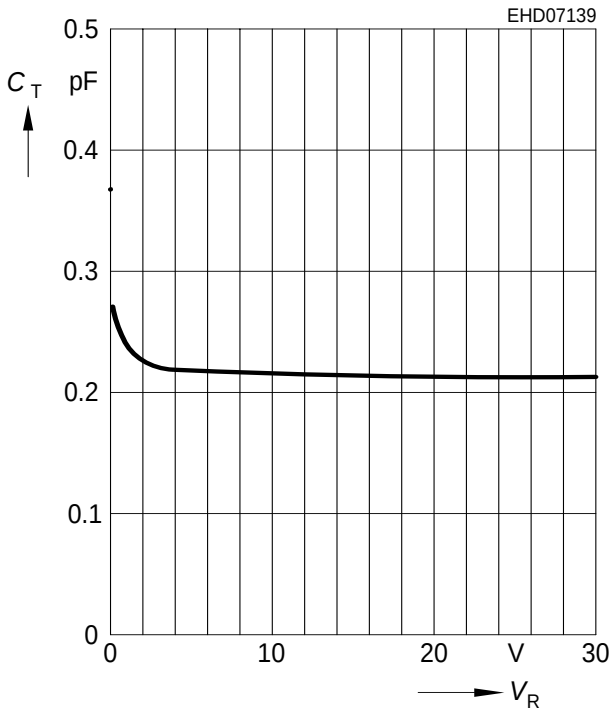
**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **AC Characteristics** | | | | | |
| Diode capacitance | $C_T$ | | | | pF |
| $V_R$ = 5 V, $f$ = 1 MHz | | - | 0.21 | 0.3 | |
| $V_R$ = 0 V, 100 MHz ... 1.8 GHz | | - | 0.3 | - | |
| Reverse parallel resistance | $R_P$ | | | | kΩ |
| $V_R$ = 0 V, $f$ = 100 MHz | | - | 500 | - | |
| $V_R$ = 0 V, $f$ = 1 GHz | | - | 15 | - | |
| $V_R$ = 0 V, $f$ = 1.8 GHz | | - | 5 | - | |
| Forward resistance | $r_f$ | | | | Ω |
| $I_F$ = 5 mA, $f$ = 100 MHz | | - | 1.2 | 2 | |
| $I_F$ = 10 mA, $f$ = 100 MHz | | - | 1 | - | |
| Charge carrier life time | $\tau_{rr}$ | - | 75 | - | ns |
| $I_F$ = 10 mA, $I_R$ = 6 mA, measured at $I_R$ = 3 mA, $R_L$ = 100 Ω | | | | | |
| I-region width | $W_I$ | - | 4.5 | - | µm |
| Insertion loss[1)] | $I_L$ | | | | dB |
| $I_F$ = 1 mA, $f$ = 1.8 GHz | | - | 0.15 | - | |
| $I_F$ = 5 mA, $f$ = 1.8 GHz | | - | 0.11 | - | |
| $I_F$ = 10 mA, $f$ = 1.8 GHz | | - | 0.1 | - | |
| Isolation[1)] | $I_{SO}$ | | | | |
| $V_R$ = 0 V, $f$ = 0.9 GHz | | - | 17.9 | - | |
| $V_R$ = 0 V, $f$ = 1.8 GHz | | - | 12.3 | - | |
| $V_R$ = 0 V, $f$ = 2.45 GHz | | - | 10 | - | |
| Series inductance | $L_S$ | - | - | - | |

[1]BAR63-02L in series configuration, $Z$ = 50Ω

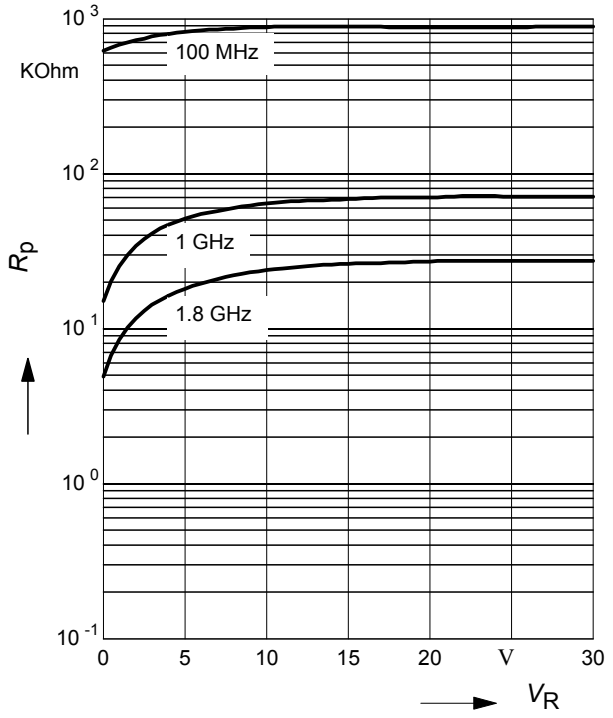
**Diode capacitance $C_T = f(V_R)$**

$f$ = 1MHz - 1.8GHz



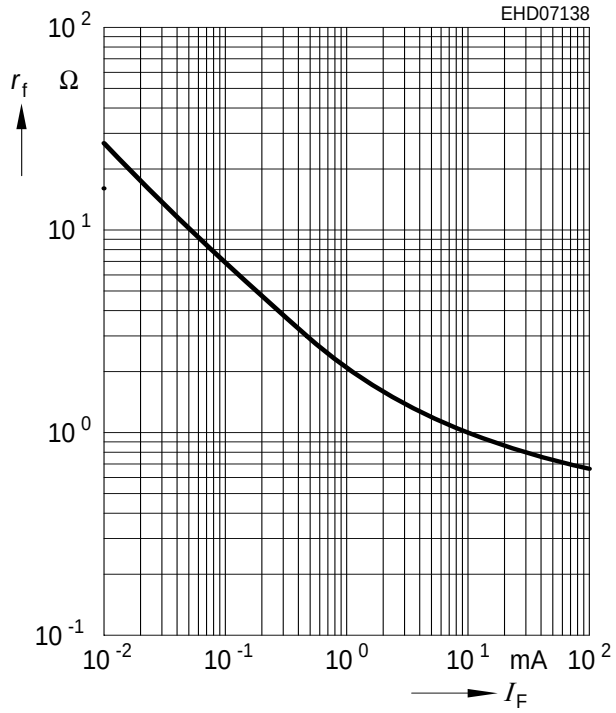

**Reverse parallel resistance $R_P = f(V_R)$**

$f$ = Parameter



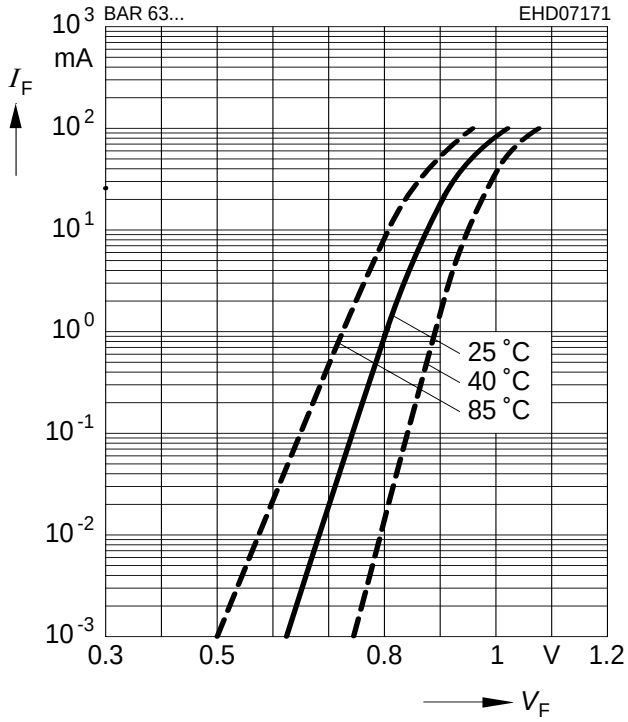

**Forward resistance $r_f = f(I_F)$**

$f$ = 100MHz

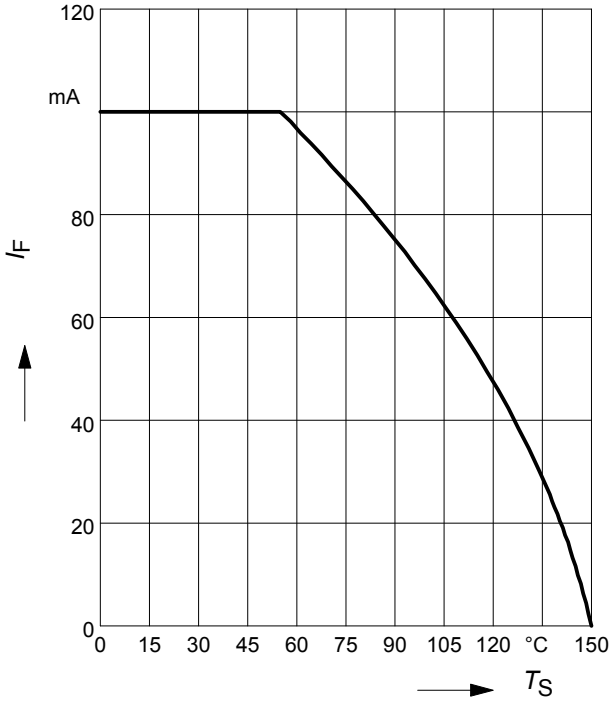



**Forward current $I_F = f(V_F)$**

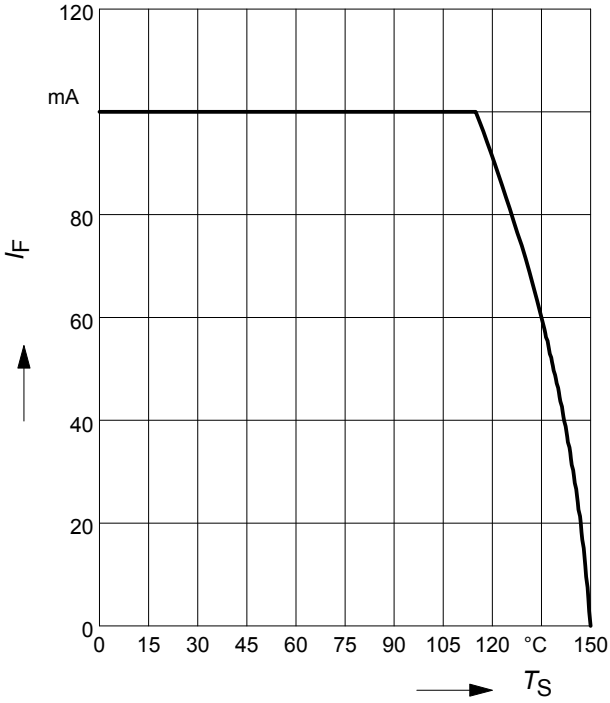
$T_A$ = Parameter



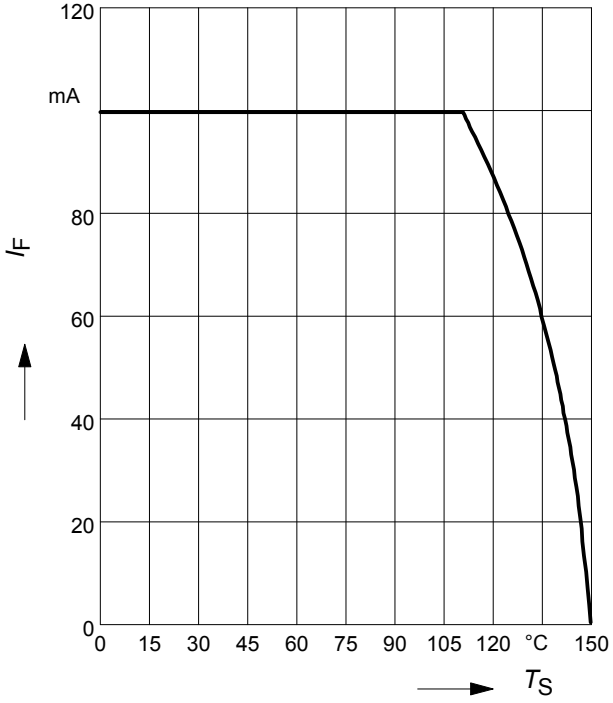
**Forward current $I_F = f(T_S)$**
BAR63-04...BAR63-06



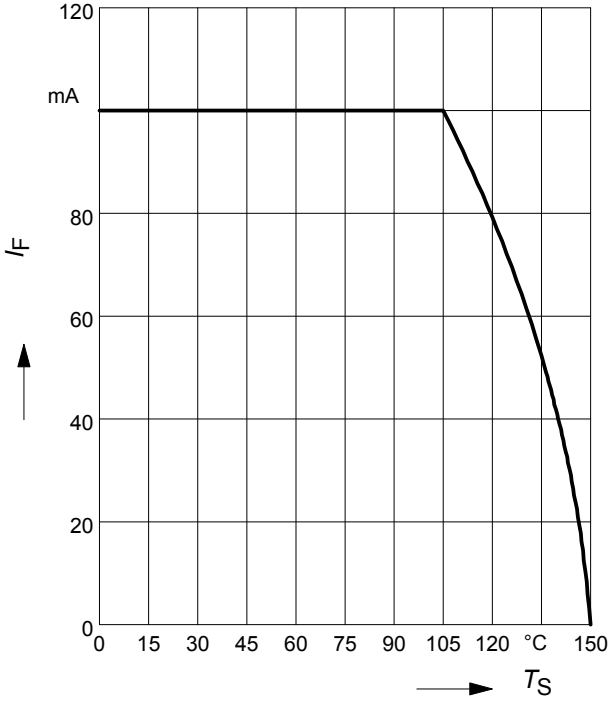

**Forward current $I_F = f(T_S)$**
BAR63-02V, BAR63-02W




**Forward current $I_F = f(T_S)$**
BAR63-03W

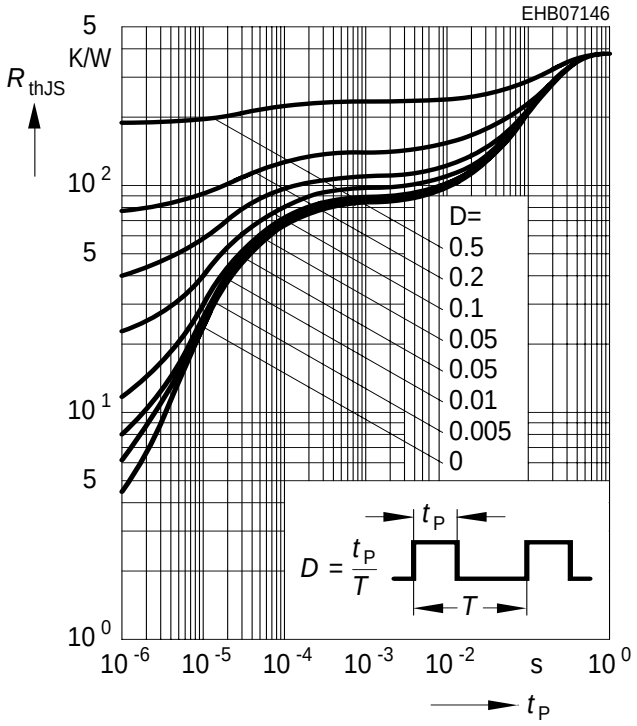



**Forward current $I_F = f(T_S)$**
BAR63-04W...BAR63-06W



**Permissible Puls Load** $R_{thJS} = f(t_p)$

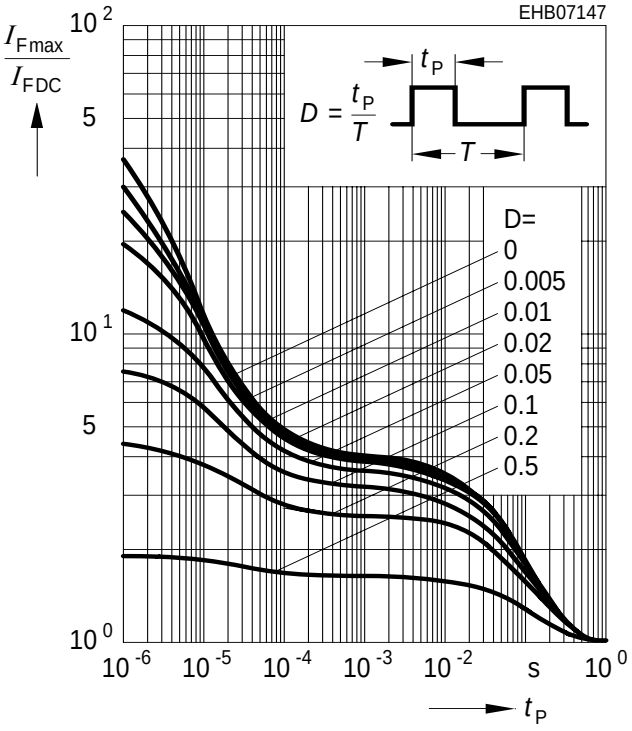
BAR63-04...BAR63-06




**Permissible Pulse Load**

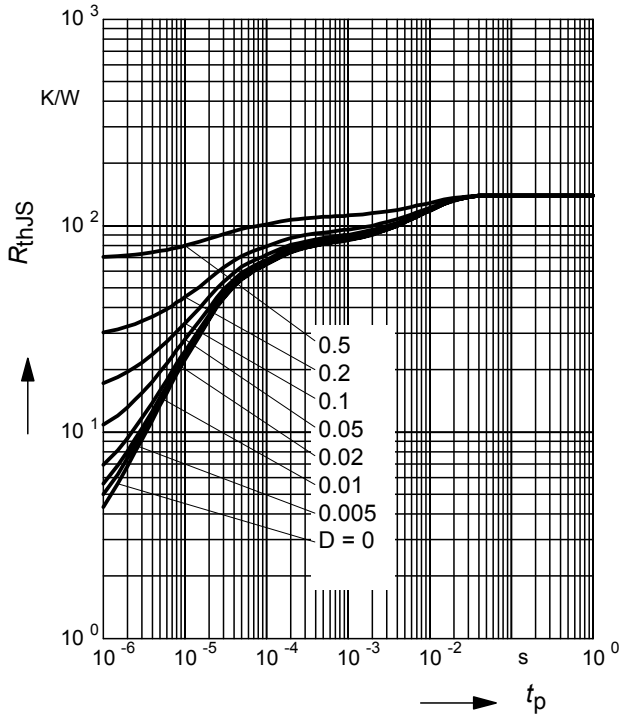
$I_{Fmax}/ I_{FDC} = f(t_p)$

BAR63-04...BAR63-06




**Permissible Puls Load** $R_{thJS} = f(t_p)$

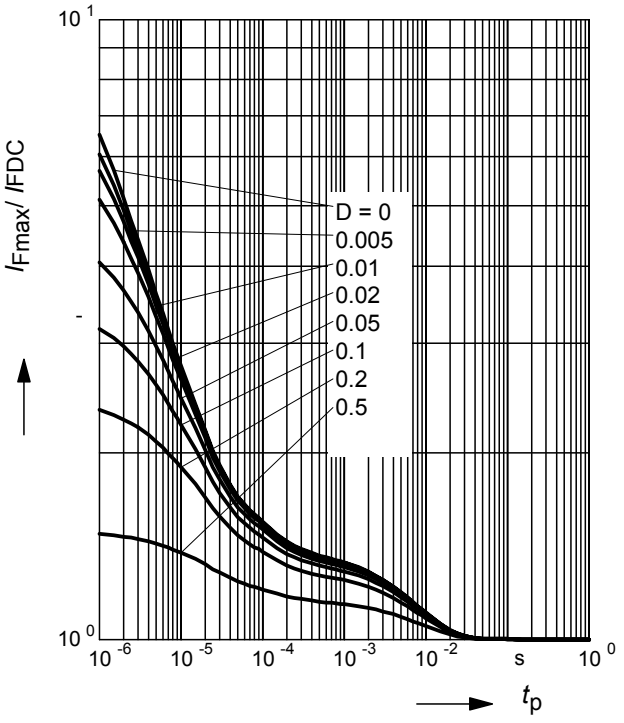
BAR63-02V, BAR63-02W




**Permissible Pulse Load**

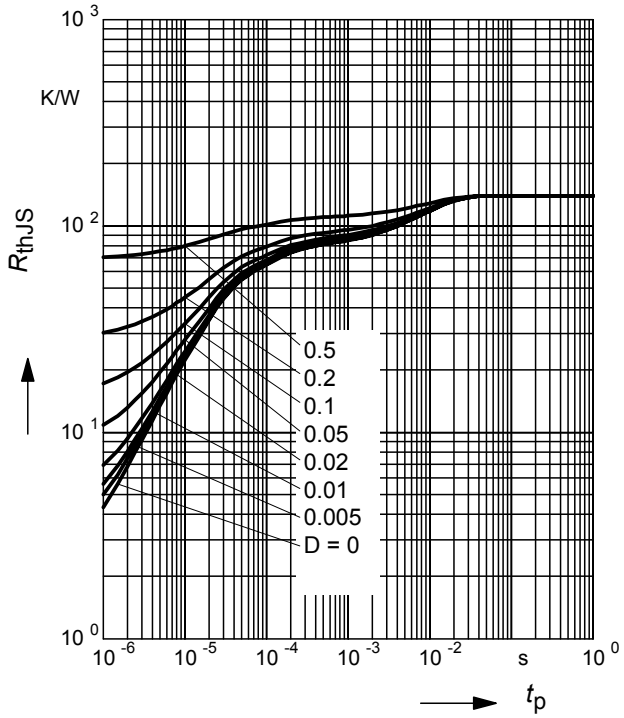
$I_{Fmax}/ I_{FDC} = f(t_p)$

BAR63-02V, BAR63-02W



**Permissible Puls Load** $R_{thJS} = f(t_p)$

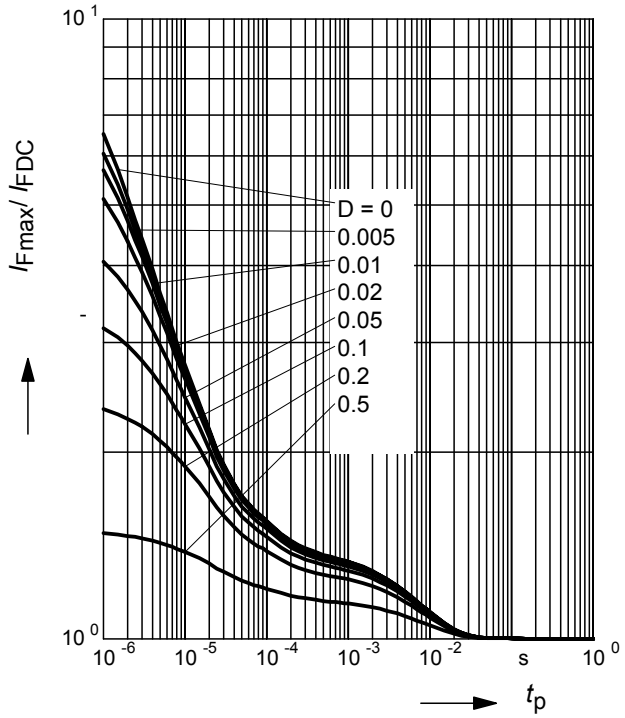
BAR63-03W




**Permissible Pulse Load**

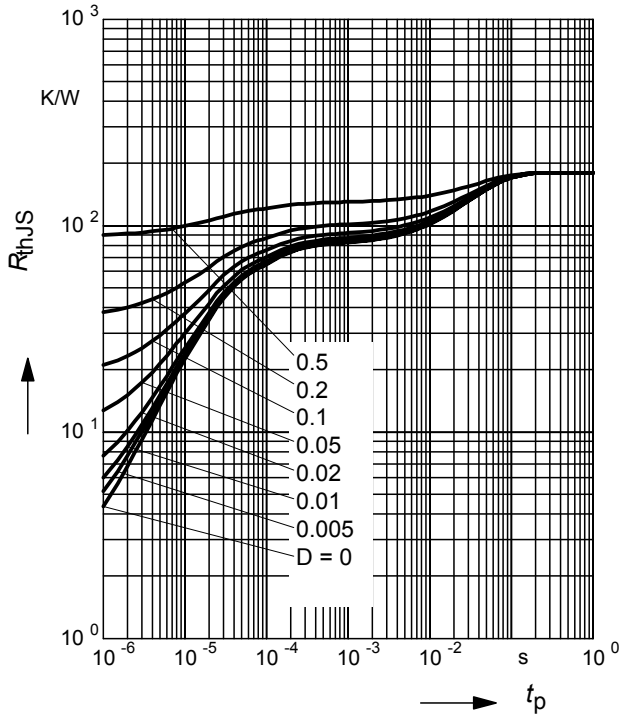
$I_{Fmax}/ I_{FDC} = f(t_p)$

BAR63-03W




**Permissible Puls Load** $R_{thJS} = f(t_p)$

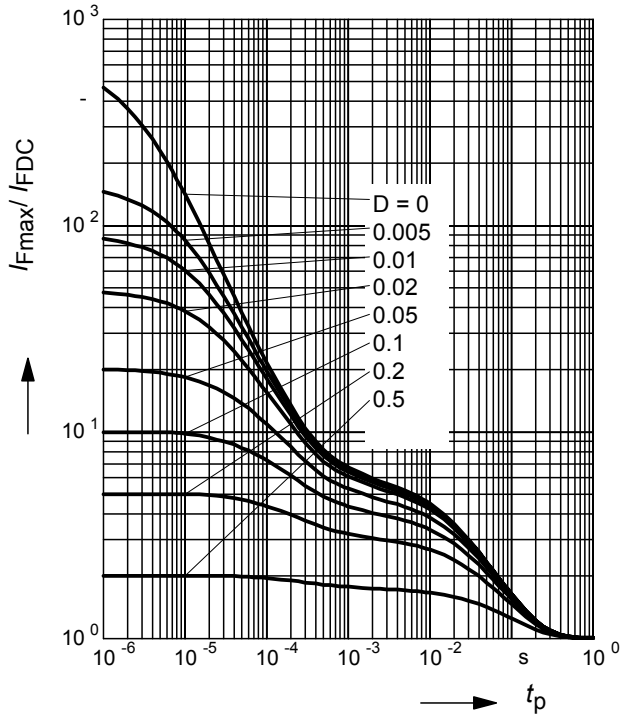
BAR63-04W...BAR63-06W




**Permissible Pulse Load**

$I_{Fmax}/ I_{FDC} = f(t_p)$

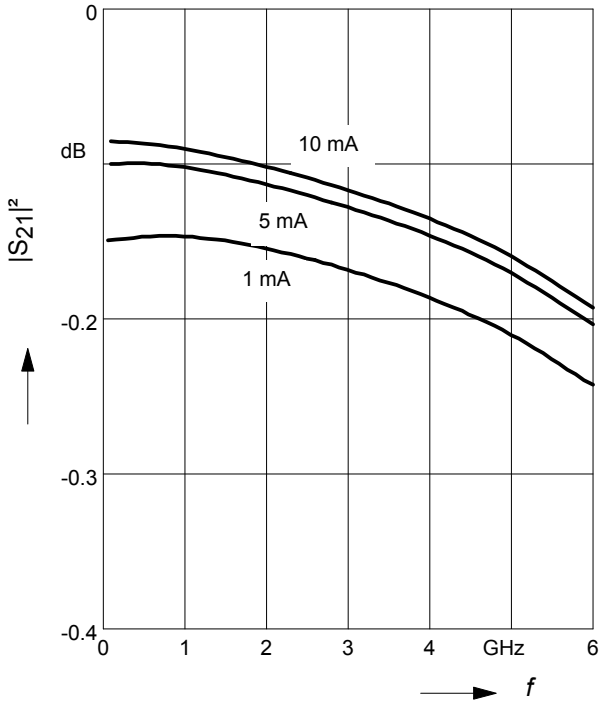
BAR63-04W...BAR63-06W



**Insertion loss** $I_L = -|S_{21}|^2 = f(f)$

$I_F$ = Parameter

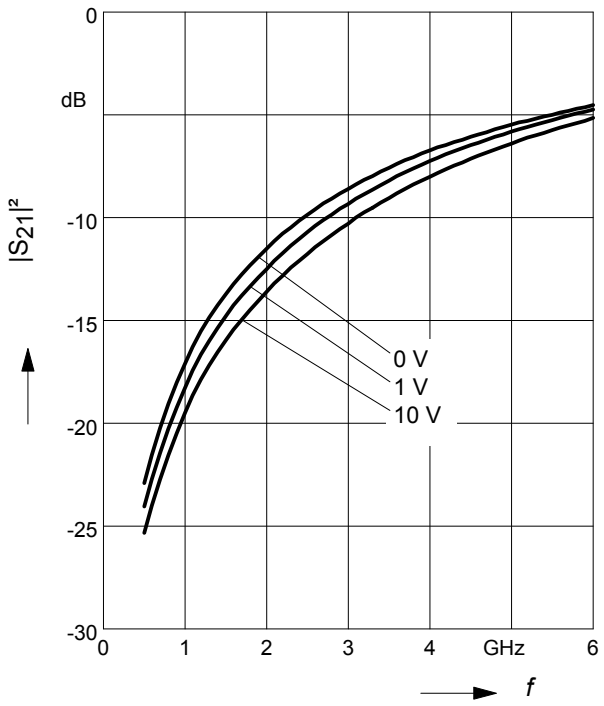
BAR63-02L in series configuration, $Z = 50\Omega$



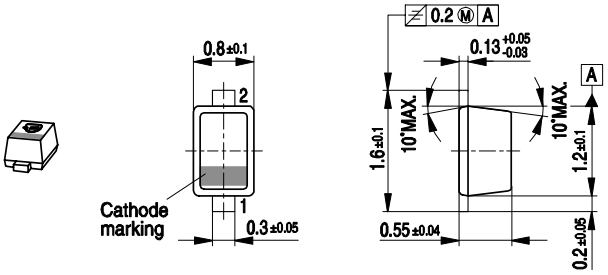

**Isolation** $I_{SO} = -|S_{21}|^2 = f(f)$

$V_R$ = Paramter

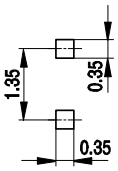
BAR63-02L in series configuration, $Z = 50\Omega$



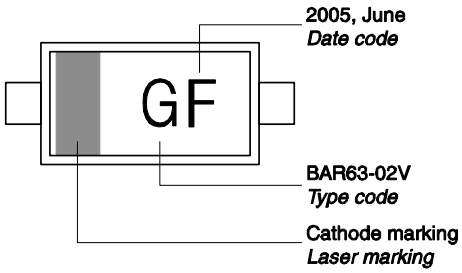
## Package Outline




## Foot Print

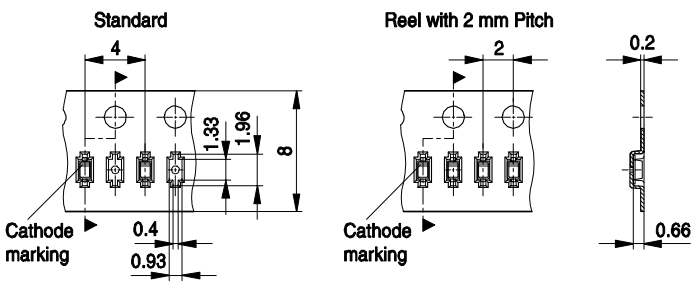



## Marking Layout (Example)

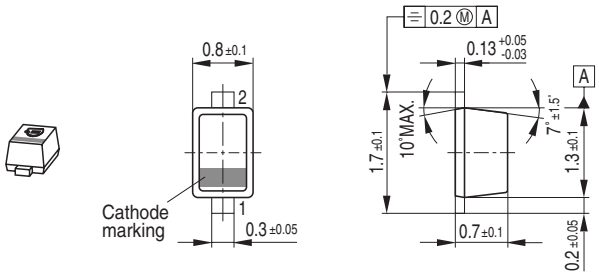



## Standard Packing

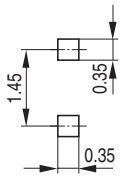
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø180 mm = 8.000 Pieces/Reel (2 mm Pitch)
Reel ø330 mm = 10.000 Pieces/Reel



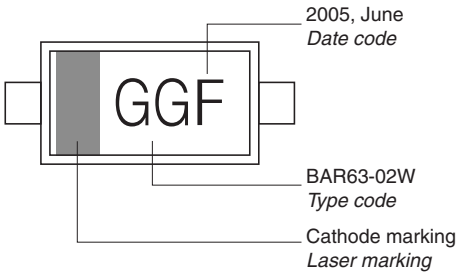
## Package Outline




## Foot Print




## Marking Layout (Example)




## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
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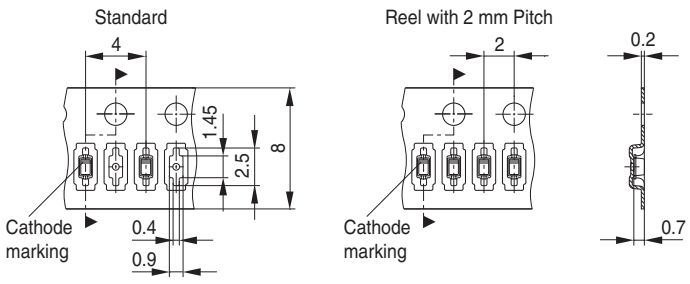
Reel ø330 mm = 10.000 Pieces/Reel

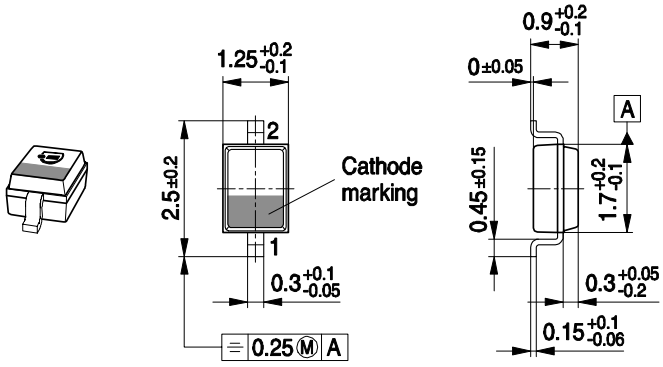


## Date Code marking for discrete packages with one digit (SCD80, SC79, SC75[1]) CES-Code

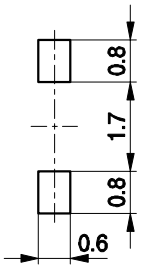
| Month | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | a | p | A | P | a | p | A | P | a | p | A | P |
| 02 | b | q | B | Q | b | q | B | Q | b | q | B | Q |
| 03 | c | r | C | R | c | r | C | R | c | r | C | R |
| 04 | d | s | D | S | d | s | D | S | d | s | D | S |
| 05 | e | t | E | T | e | t | E | T | e | t | E | T |
| 06 | f | u | F | U | f | u | F | U | f | u | F | U |
| 07 | g | v | G | V | g | v | G | V | g | v | G | V |
| 08 | h | x | H | X | h | x | H | X | h | x | H | X |
| 09 | j | y | J | Y | j | y | J | Y | j | y | J | Y |
| 10 | k | z | K | Z | k | z | K | Z | k | z | K | Z |
| 11 | l | 2 | L | 4 | l | 2 | L | 4 | l | 2 | L | 4 |
| 12 | n | 3 | N | 5 | n | 3 | N | 5 | n | 3 | N | 5 |

1) New Marking Layout for SC75, implemented at October 2005.

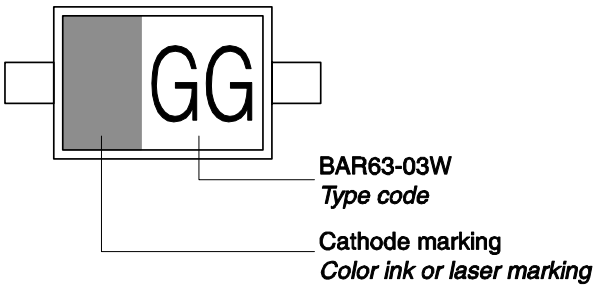
## Package Outline




## Foot Print

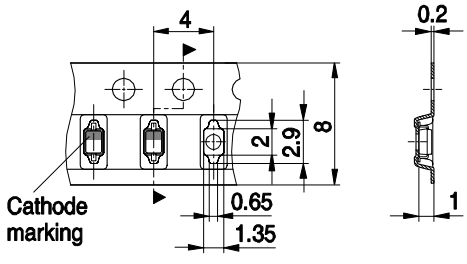



## Marking Layout (Example)

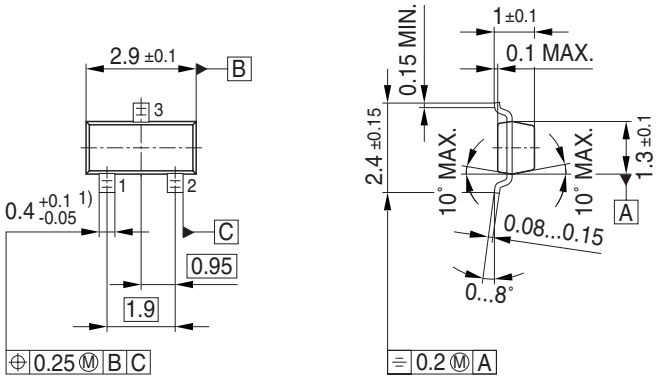



## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel

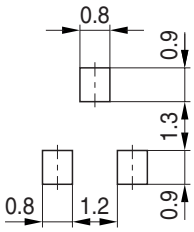


## Package Outline

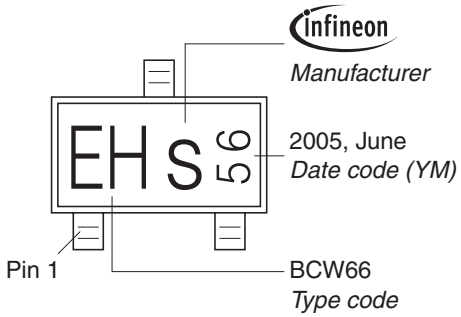



1) Lead width can be 0.6 max. in dambar area

## Foot Print

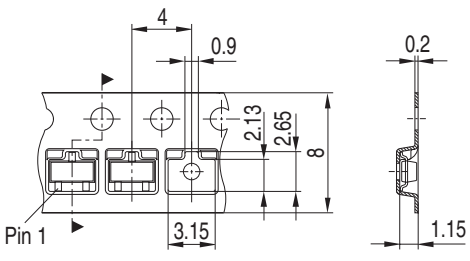



## Marking Layout (Example)

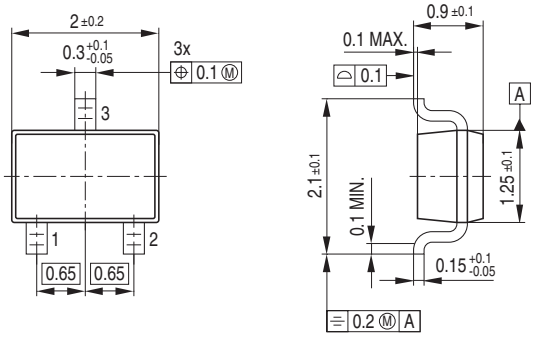



## Standard Packing

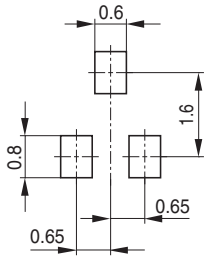
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



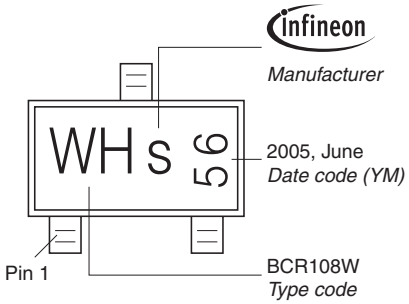
## Package Outline




## Foot Print

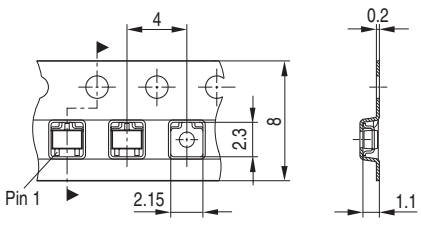



## Marking Layout (Example)

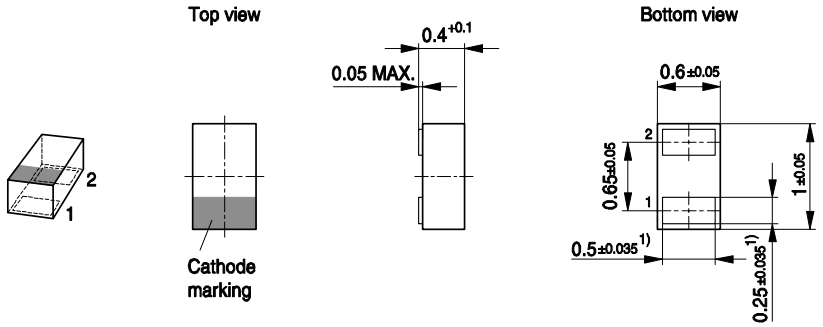



## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



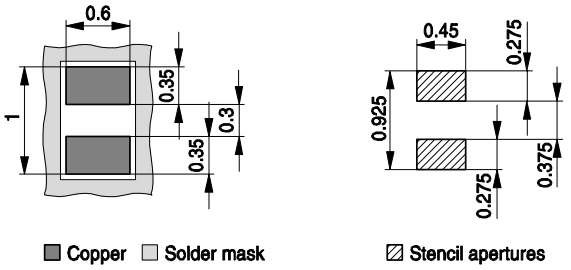
## Package Outline



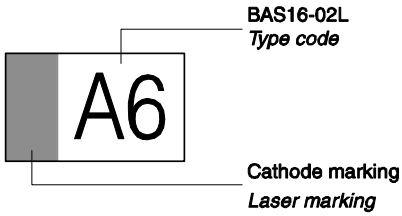

1) Dimension applies to plated terminal

## Foot Print

For board assembly information please refer to Infineon website "Packages"

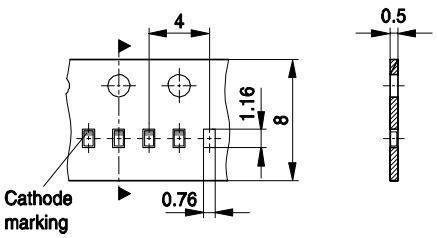



## Marking Layout (Example)




## Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel
Reel ø330 mm = 50.000 Pieces/Reel (optional)



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