



# Standard Rectifier

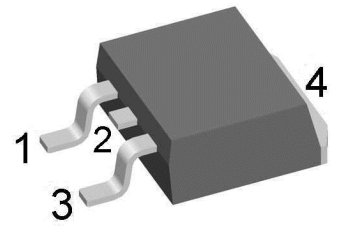
$V_{RRM}$	=	1600 V
$I_{FAV}$	=	30 A
$V_F$	=	1.25 V

## Single Diode

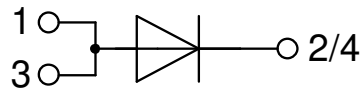
**Part number**

**DSI30-16AS**

Marking on Product: DSI30-16AS



Backside: cathode



**Features / Advantages:**

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

**Applications:**

- Diode for main rectification
- For single and three phase bridge configurations

**Package:** TO-263 (D2Pak)

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

**Disclaimer Notice**

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).

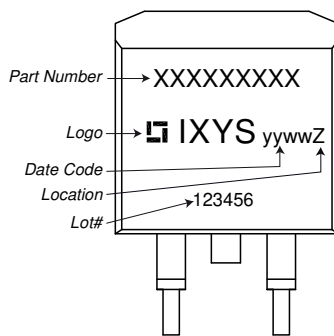
Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage					1700	V
$V_{RRM}$	max. repetitive reverse blocking voltage					1600	V
$I_R$	reverse current	$V_R = 1600$ V	$T_{VJ} = 25^\circ\text{C}$			40	$\mu\text{A}$
		$V_R = 1600$ V	$T_{VJ} = 150^\circ\text{C}$			1.5	mA
$V_F$	forward voltage drop	$I_F = 30$ A	$T_{VJ} = 25^\circ\text{C}$			1.29	V
		$I_F = 60$ A				1.60	V
		$I_F = 30$ A	$T_{VJ} = 150^\circ\text{C}$			1.25	V
		$I_F = 60$ A				1.66	V
$I_{FAV}$	average forward current	$T_C = 130^\circ\text{C}$ rectangular	$T_{VJ} = 175^\circ\text{C}$ d = 0.5			30	A
$V_{FO}$	threshold voltage	} for power loss calculation only				0.82	V
$r_F$	slope resistance					14.1	m $\Omega$
$R_{thJC}$	thermal resistance junction to case					0.9	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.25		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		160	W
$I_{FSM}$	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$			300	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			325	A
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^\circ\text{C}$			255	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			275	A
$I^2t$	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$			450	A <sup>2</sup> s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			440	A <sup>2</sup> s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^\circ\text{C}$			325	A <sup>2</sup> s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			315	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400$ V; f = 1 MHz	$T_{VJ} = 25^\circ\text{C}$		10		pF



Package TO-263 (D2Pak)			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			35	A
$T_{VJ}$	virtual junction temperature		-40		175	°C
$T_{op}$	operation temperature		-40		150	°C
$T_{stg}$	storage temperature		-40		150	°C
<b>Weight</b>				1.5		g
$F_C$	mounting force with clip		20		60	N

<sup>1)</sup>  $I_{RMS}$  is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

**Product Marking**



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSI30-16AS-TRL	DSI30-16AS	Tape & Reel	800	498378
Alternative	DSI30-16AS-TUB	DSI30-16AS	Tube	50	471011

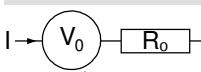
Similar Part	Package	Voltage class
DSI30-16A	TO-220AC (2)	1600
DSI30-12AS	TO-263AB (D2Pak) (2)	1200
DSI30-12A	TO-220AC (2)	1200
DSI30-12AC	ISOPLUS220AC (2)	1200

DSI30-08AS	TO-263AB (D2Pak) (2)	800
DSI30-08A	TO-220AC (2)	800
DSI30-08AC	ISOPLUS220AC (2)	800

**Equivalent Circuits for Simulation**

\* on die level

$T_{VJ} = 175^{\circ}C$

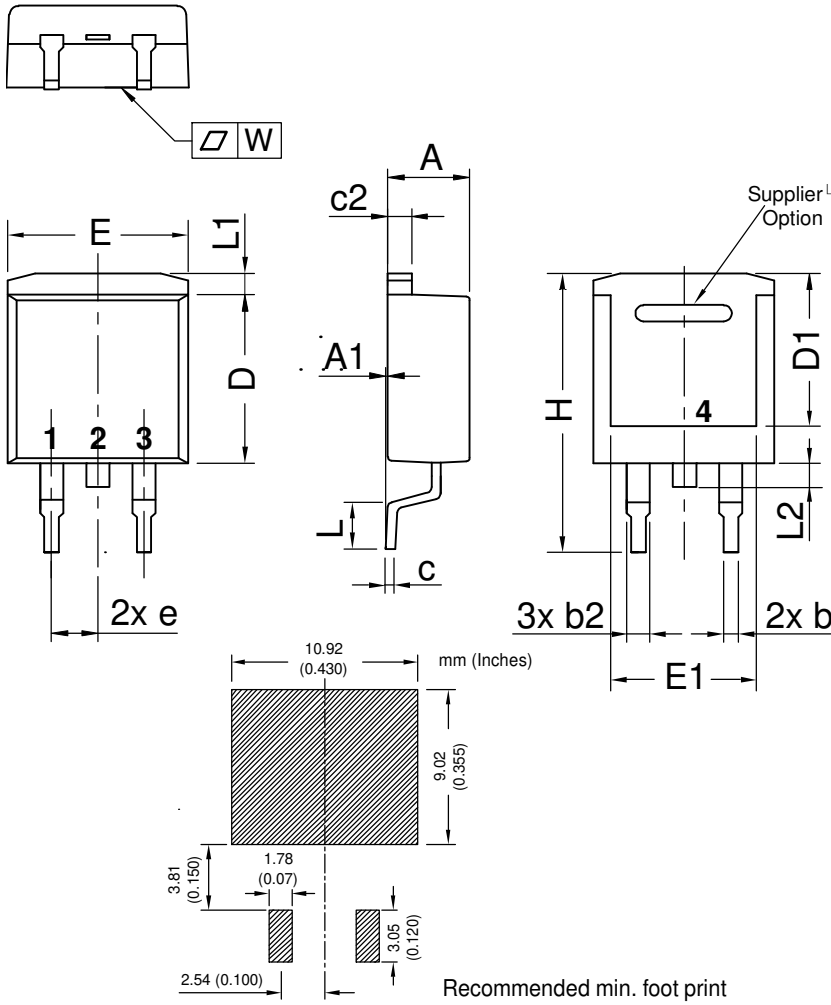


**Rectifier**

$V_{0\ max}$	threshold voltage	0.82	V
$R_{0\ max}$	slope resistance *	11	mΩ

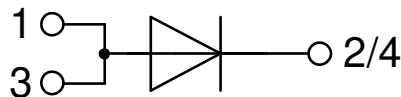


**Outlines TO-263 (D2Pak)**



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ. 0.10		typ. 0.004	
A2	2.41		0.095	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
D2	2.5		0.098	
E	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
e	2.54 BSC		0.100 BSC	
e1	4.28		0.169	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.02	1.68	0.040	0.066
W	typ. 0.02	0.040	typ. 0.0008	0.002

*All dimensions conform with and/or within JEDEC standard.*



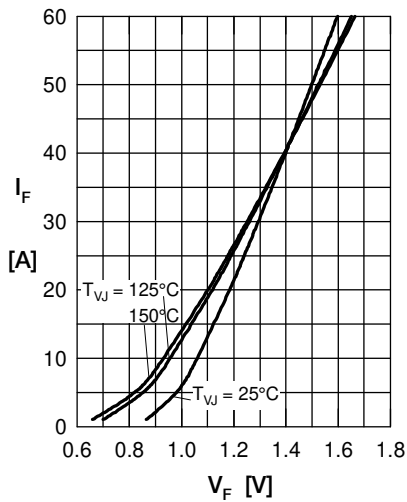
**Rectifier**


Fig. 1 Forward current versus voltage drop per diode

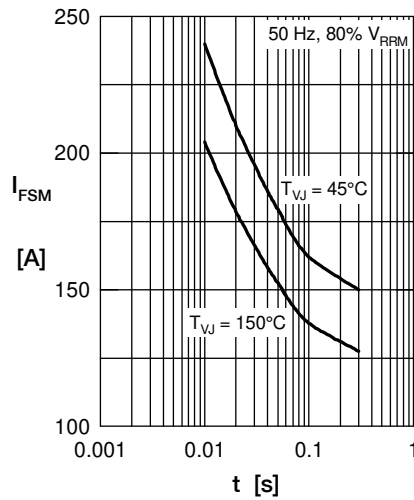


Fig. 2 Surge overload current

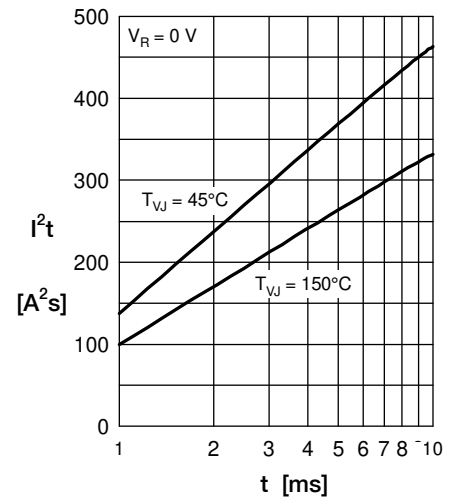
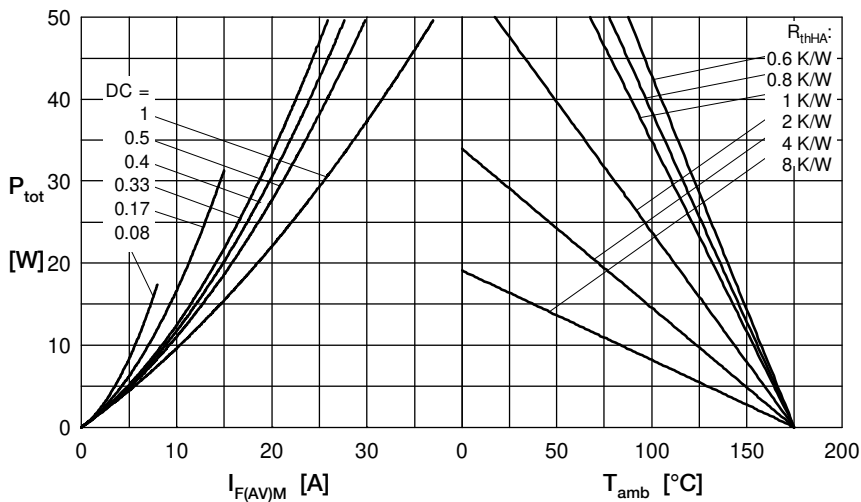

 Fig. 3  $I^2t$  versus time per diode


Fig. 4 Power dissipation vs. direct output current and ambient temperature

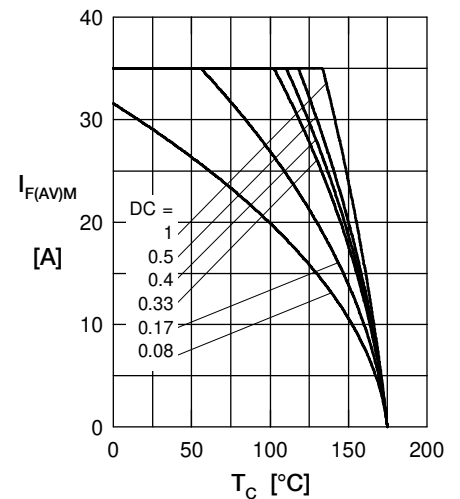


Fig. 5 Max. forward current vs. case temperature

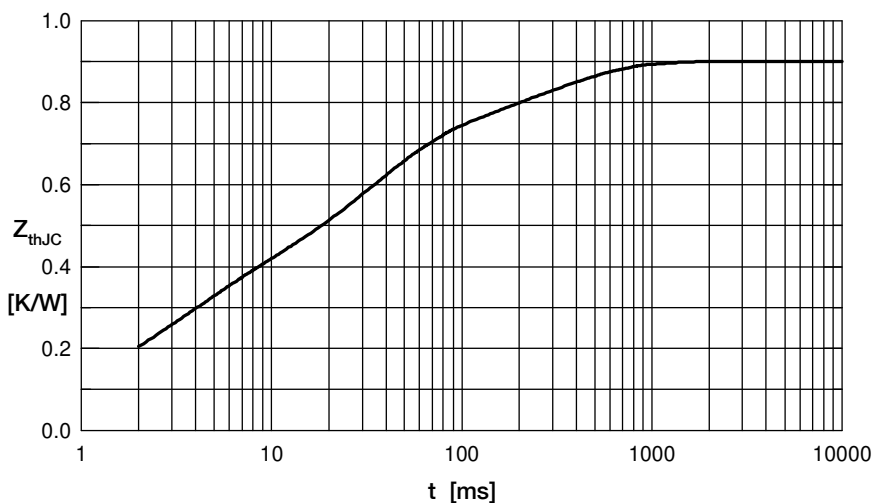


Fig. 6 Transient thermal impedance junction to case

 Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.03	0.0004
2	0.08	0.002
3	0.2	0.003
4	0.39	0.03
5	0.2	0.29