

Standard Rectifier

$$V_{RRM} = 1200V$$

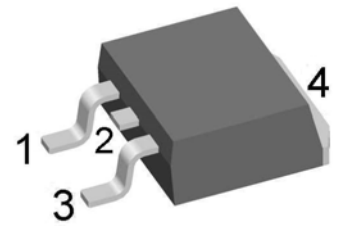
$$I_{FAV} = 30A$$

$$V_F = 1.25V$$

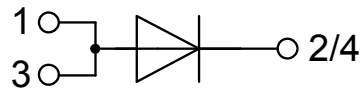
Single Diode

Part number

DSI30-12AS



Backside: cathode



Features / Advantages:

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

Applications:

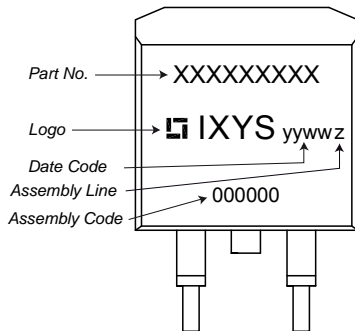
- Diode for main rectification
- For single and three phase bridge configurations

Package: TO-263 (D2Pak)

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

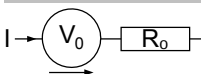
Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					1300	V
V_{RRM}	max. repetitive reverse blocking voltage					1200	V
I_R	reverse current	$V_R = 1200$ V	$T_{VJ} = 25^\circ\text{C}$			40	μA
		$V_R = 1200$ V	$T_{VJ} = 150^\circ\text{C}$			1.5	mA
V_F	forward voltage drop	$I_F = 30$ A	$T_{VJ} = 25^\circ\text{C}$			1.29	V
						1.60	V
		$I_F = 60$ A	$T_{VJ} = 150^\circ\text{C}$			1.25	V
						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			$T_{VJ} = 175^\circ\text{C}$		0.82	V
r_F	slope resistance					14.1	m Ω
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	$T_{VJ} = 45^\circ\text{C}$	$V_R = 0$ V		300	A
						325	A
		t = 8,3 ms; (60 Hz), sine	$T_{VJ} = 150^\circ\text{C}$	$V_R = 0$ V		255	A
						275	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$	$V_R = 0$ V		450	A ² s
						440	A ² s
		t = 8,3 ms; (60 Hz), sine	$T_{VJ} = 150^\circ\text{C}$	$V_R = 0$ V		325	A ² s
						315	A ² 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 ¹⁾			35	A
T_{stg}	storage temperature		-55		150	°C
T_{VJ}	virtual junction temperature		-40		175	°C
Weight				2		g
F_C	mounting force with clip		20		60	N

Product Marking


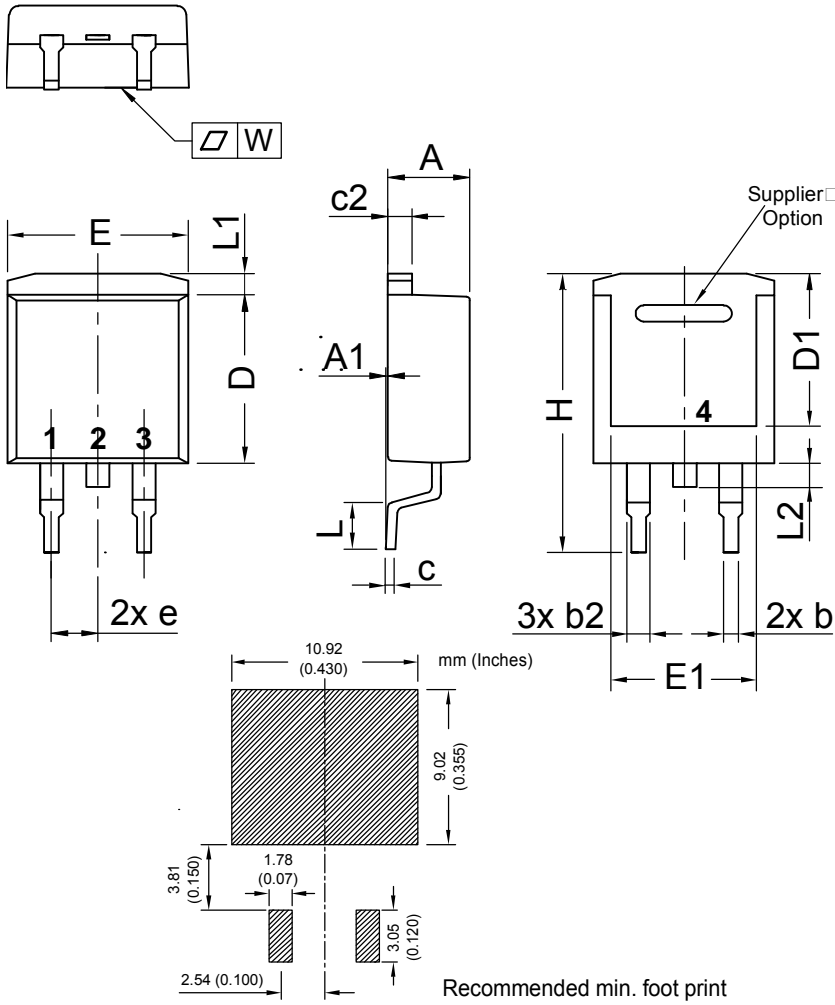
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSI30-12AS	DSI30-12AS	Tube	50	507511

Similar Part	Package	Voltage class
DSI30-12A	TO-220AC (2)	1200
DSI30-12AC	ISOPLUS220AC (2)	1200
DSI30-16AS	TO-263AB (D2Pak) (2)	1600
DSI30-16A	TO-220AC (2)	1600
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*
 $T_{VJ} = 175\text{ °C}$

Rectifier

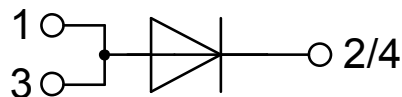
$V_{0\ max}$	threshold voltage	0.82	V
$R_{0\ max}$	slope resistance *	11	mΩ

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

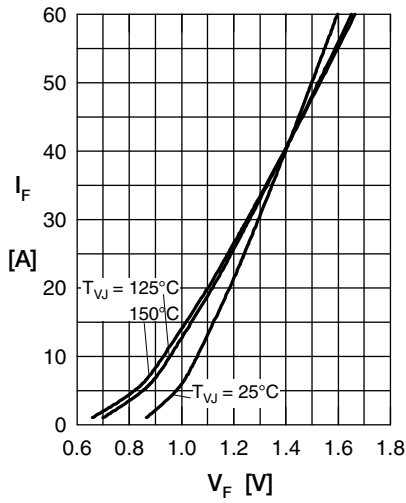


Fig. 1 Forward current versus voltage drop per diode

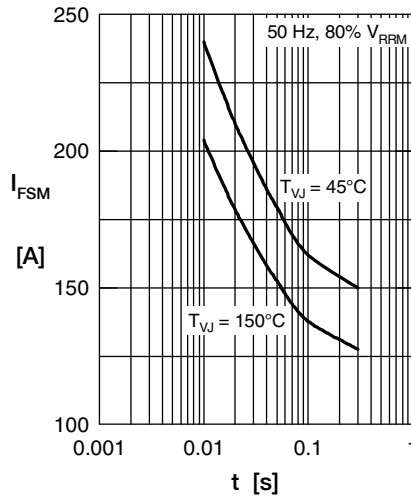


Fig. 2 Surge overload current

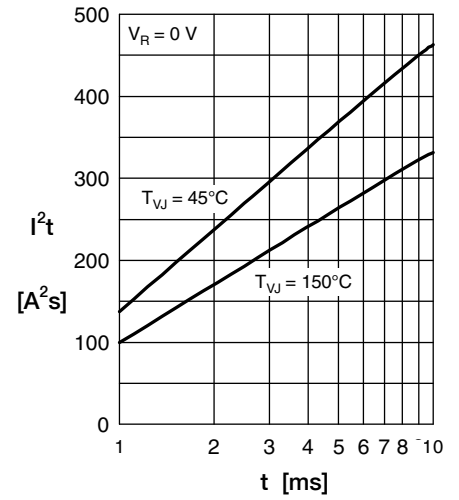


Fig. 3 I^2t versus time per diode

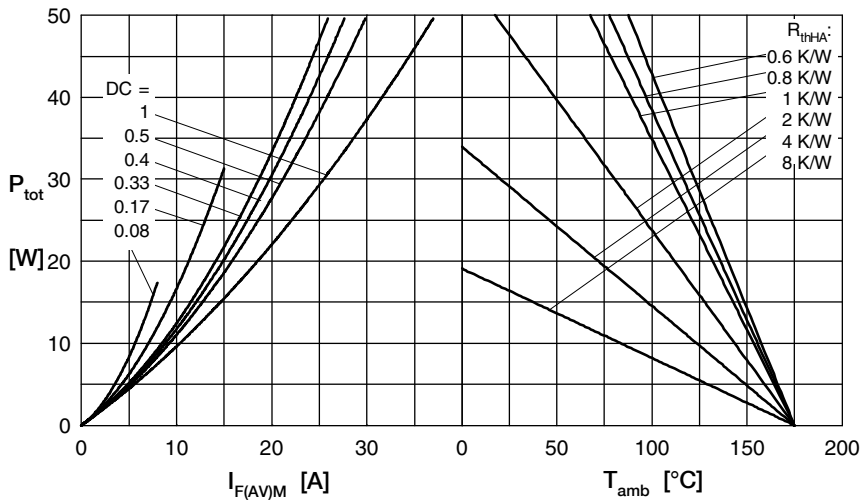


Fig. 4 Power dissipation vs. direct output current and ambient temperature

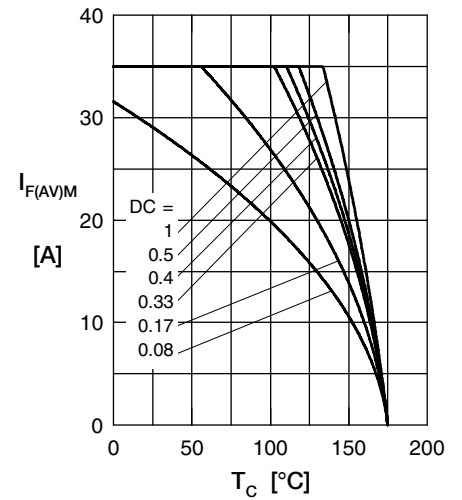


Fig. 5 Max. forward current vs. case temperature

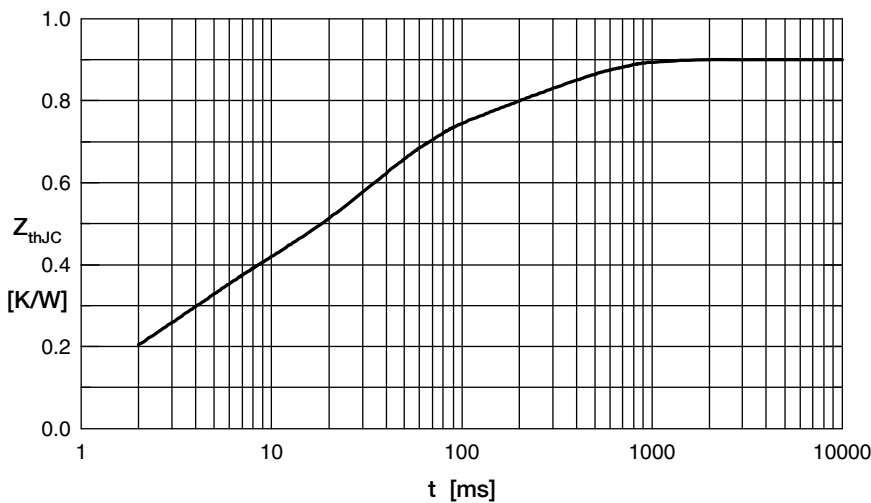


Fig. 6 Transient thermal impedance junction to case

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