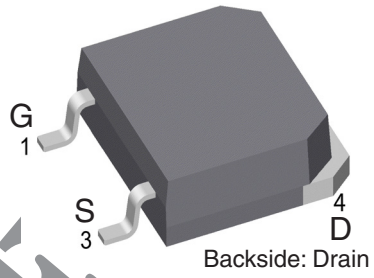
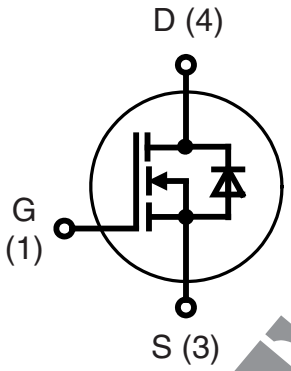
SiC Power MOSFET

I_{D25} = 90 A
V_{DSS} = 1200 V
$R_{DS(on)\ max}$ = 34 mΩ

Single MOSFET

Part number
MCB60I1200TZ





Features / Advantages:
- High speed switching with low capacitances
- High blocking voltage with low $R_{DS(on)}$
- Easy to parallel and simple to drive
- Avalanche ruggedness
- Resistant to latch-up

Applications:
- Solar inverters
- High voltage DC/DC converters
- Motor drives
- Switch mode power supplies
- UPS
- Battery chargers
- Induction heating

Package: TO-268AA (D3Pak-HV)
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- High creepage distance between terminals

PRELIMINARY

Terms & Conditions of usage
The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact the sales office, which is responsible for you.
Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you.
Should you intend to use the product in aviation, in health or live endangering or life support applications, please notify. For any such application we urgently recommend
- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

IXYS reserves the right to change limits, test conditions and dimensions.

© 2016 IXYS All rights reserved

MOSFET				Ratings			
Symbol	Definitions	Conditions		min.	typ.	max.	
V_{DSS}	*drain source breakdown voltage*					1200	V
V_{GSM}	*max transient gate source voltage*			-10		+25	V
V_{GS}	*continous gate source voltage*	recommended operational value		-5		+20	V
I_{D25}	*drain current*		T_C = 25°C			90	A
I_{D80}			T_C = 80°C			70	A
I_{D100}			T_C = 100°C			60	A
R_{DSon}	*static drain source on resistance*	I_D = 50 A; V_{GS} = 20 V	T_{VJ} = 25°C		25	34	mΩ
			T_{VJ} = 150°C		43		mΩ
			T_{VJ} = 175°C		52		mΩ
$V_{GS(th)}$	*gate threshold voltage*	I_D = 15 mA; V_{DS} = 10 V	T_{VJ} = 25°C	2.0	2.6	4.0	V
			T_{VJ} = 175°C		2.1		V
I_{DSS}	*drain source leakage current*	V_{DS} = 1200 V; V_{GS} = 0 V	T_{VJ} = 25°C		2	100	µA
I_{GSS}	*gate source leakage current*	V_{DS} = 0 V; V_{GS} = 20 V	T_{VJ} = 25°C			0.6	µA
R_G	*internal gate resistance*					1.1	Ω
C_{iss}	*input capacitance*	V_{DS} = 1000 V; V_{GS} = 0 V; f = 1 MHz	T_{VJ} = 25°C		2790		pF
C_{oss}	*output capacitance*				220		pF
C_{rss}	*reverse transfer (Miller) capacitance*				15		pF
Q_g	*total gate charge*	V_{DS} = 800 V; I_D = 50 A; V_{GS} = -5/20 V	T_{VJ} = 25°C		160		nC
Q_{gs}	*gate source charge*				46		nC
Q_{gd}	*gate drain (Miller) charge*				50		nC
$t_{d(on)}$	*turn-on delay time*	Inductive switching V_{DS} = 800 V; I_D = 50 A V_{GS} = -5/20 V; R_G = 2 Ω (external)	T_{VJ} = 25°C				ns
t_r	*current rise time*						ns
$t_{d(off)}$	*turn-off delay time*						ns
t_f	*current fall time*						ns
E_{on}	*turn-on energy per pulse*						mJ
E_{off}	*turn-off energy per pulse*						mJ
$E_{rec(off)}$	*reverse recovery losses at turn-off*						mJ
R_{thJC}	*thermal resistance junction to case*					0.27	K/W
R_{thJH}	*thermal resistance junction to heatsink*	with heatsink compound; IXYS test setup [1]			0.38		K/W

[1] part is mounted directly on heat sink

Source-Drain Diode				Ratings			
Symbol	Definitions	Conditions		min.	typ.	max.	
I_{S25}	*continuous source current*	V_{GS} = -5 V	T_C = 25°C				A
I_{S100}			T_C = 80°C				A
V_{SD}	*forward voltage drop*	I_F = 25 A; V_{GS} = -5 V	T_{VJ} = 25°C		4.0		V
			T_{VJ} = 175°C		3.5		V
t_{rr}	*reverse recovery time*	V_{GS} = -5 V; I_F = 50 A V_R = 800 V; -di_F/dt = 1000 A/µs	T_{VJ} = 25°C		45		ns
Q_{RM}	*reverse recovery charge (intrinsic diode)*				410		nC
I_{RM}	*max. reverse recovery current*				13.5		A

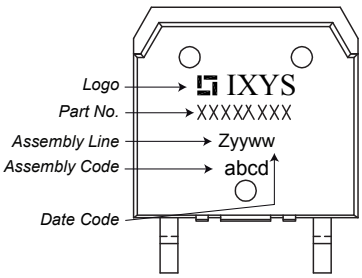
TENTATIVE

© 2016 IXYS All rights reserved

Package TO-268AA (D3Pak-HV)

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per terminal					A
T_{stg}	*storage temperature*			-40		150	°C
T_{op}	*operation temperature*			-40		150	°C
T_{VJ}	*virtual junction temperature*			-40		175	°C
Weight					4		g
F_C	*mounting fource with clip*			20		120	Nm
$d_{Spp/App}$	*creepage distance on surface / striking distance through air*		*terminal to terminal*	9.4			mm
$d_{Spb/Apb}$			*terminal to backside*	5.6			mm

Product Marking



Part number

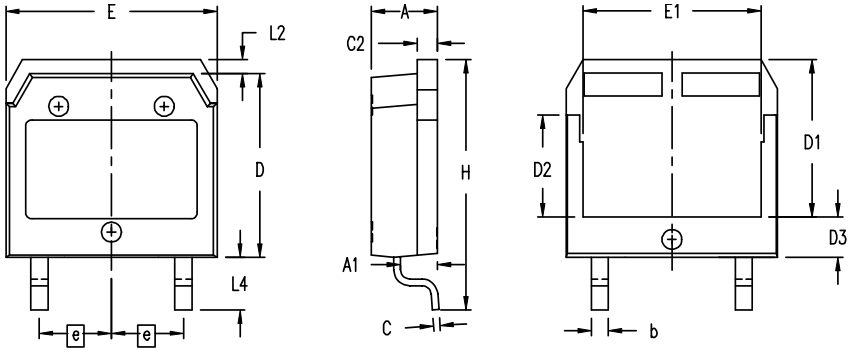
M = Mosfet
C = SiC MOSFET
B = Generation 2
60 = Current Rating [A]
I = Single Mosfet
1200 = Reverse Voltage [V]
TZ = TO-268AA (D3Pak) (2HV)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MCB60I1200TZ	MCB60I1200TZ	Tube	30	515522

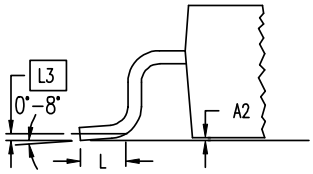
TENTATIVE

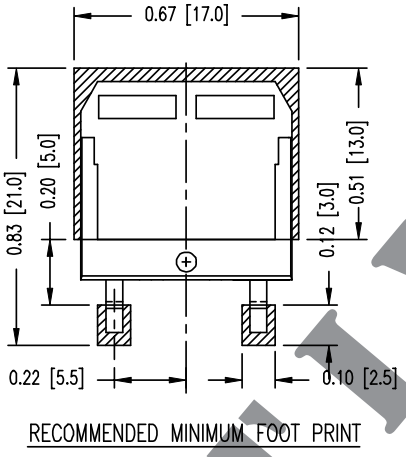
© 2016 IXYS All rights reserved

Outlines TO-268AA (D3Pak-HV)



D; backside

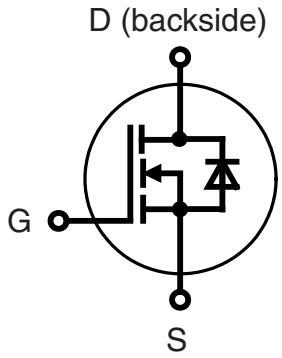




RECOMMENDED MINIMUM FOOT PRINT

Dim.	Millimeter		Inches	
	min	max	min	max
A	4.90	5.10	0.193	0.201
A1	2.70	2.90	0.106	0.114
A2	0.02	0.25	0.001	0.010
b	1.15	1.45	0.045	0.057
C	0.40	0.65	0.016	0.026
C2	1.45	1.60	0.057	0.063
D	13.80	14.00	0.543	0.551
D1	11.80	12.10	0.465	0.476
D2	7.50	7.80	0.295	0.307
D3	2.90	3.20	0.114	0.126
E	15.85	16.05	0.624	0.632
E1	13.30	13.60	0.524	0.535
e	5.450 BSC		0.215 BSC	
H	18.70	19.10	0.736	0.752
L	1.70	2.00	0.067	0.079
L2	1.00	1.15	0.039	0.045
L3	0.250 BSC		0.010 BSC	
L4	3.80	4.10	0.150	0.161

TENTATIVE



© 2016 IXYS All rights reserved

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

IXYS:
MCB60I1200TZ-TUB