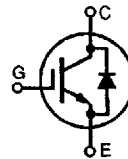


Low $V_{CE(sat)}$ IGBT with Diode High Speed IGBT with Diode Combi Pack

IXGH 12N100U1
IXGH 12N100AU1

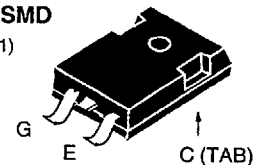
V_{CES}	I_{C25}	$V_{CE(sat)}$
1000 V	24 A	3.5 V
1000 V	24 A	4.0 V



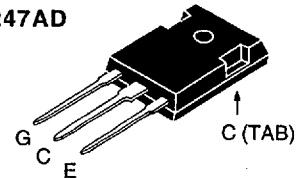
Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1000	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1\text{ M}\Omega$	1000	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	24	A
I_{C90}	$T_C = 90^\circ\text{C}$	12	A
I_{CM}	$T_C = 25^\circ\text{C}, 1\text{ ms}$	48	A
SSOA (RBSOA)	$V_{GE} = 15\text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 150\ \Omega$ Clamped inductive load, $L = 300\ \mu\text{H}$	$I_{CM} = 24$ @ $0.8\ V_{CES}$	A
P_c	$T_C = 25^\circ\text{C}$	100	W
T_J		$-55 \dots +150$	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		$-55 \dots +150$	$^\circ\text{C}$
M_d	Mounting torque with screw M3	1.13/10	Nm/lb.in.
Weight		6	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$

TO-247 SMD

(Note 1)



TO-247AD



Note 1: Add suffix "S" to order TO-247SMD version.

G = Gate C = Collector
E = Emitter TAB = Collector

Features

- International standard packages JEDEC TO-247
- IGBT with antiparallel FRED in one package
- HDMOST™ process
- Low $V_{CE(sat)}$
 - for minimum on-state conduction losses
- MOS Gate turn-on
 - drive simplicity
- Fast Recovery Epitaxial Diode (FRED)
 - soft recovery with low I_{RM}

Applications

- DC choppers
- AC motor speed control
- DC servo and robot drives
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Advantages

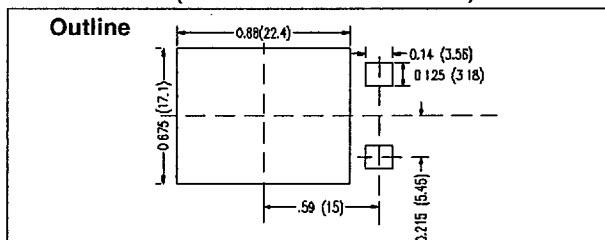
- Easy to mount with one screw
- Reduces assembly time and cost
- Space savings (two devices in one package)

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 3\text{ mA}, V_{GE} = 0\text{ V}$	1000		V
$V_{GE(th)}$	$I_C = 500\ \mu\text{A}, V_{GE} = V_{GE}$	2.5		5.5 V
I_{CES}	$V_{CE} = 0.8, V_{CES}$ $V_{GE} = 0\text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		300 μA 5 mA
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = \pm 20\text{ V}$			$\pm 100\text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15$	12N100U1 12N100AU1		3.5 V 4.0 V

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$I_C = I_{C90}, V_{CE} = 10 \text{ V}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $\leq 2\%$	6	10	S
C_{ies}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		750	pF
C_{oes}			120	pF
C_{res}			30	pF
Q_g	$I_C = I_{C90}, V_{GE} = 15 \text{ V}, V_{CE} = 0.5 V_{CES}$		65	nC
Q_{ge}			8	nC
Q_{gc}			24	nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15 \text{ V}, L = 300 \mu\text{H}$ $V_{CE} = 800 \text{ V}, R_G = R_{off} = 120 \Omega$ Remarks: Switching times may increase for $V_{CE} \text{ (Clamp)} > 0.8 V_{CES}$, higher T_J or increased R_G		100	ns
t_{ri}			200	ns
$t_{d(off)}$			850	1000 ns
t_{fi}		12N100U1	800	1000 ns
t_{fi}		12N100AU1	500	700 ns
E_{off}		12N100AU1	2.5	4 mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15 \text{ V}, L = 300 \mu\text{H}$ $V_{CE} = 800 \text{ V}, R_G = R_{off} = 120 \Omega$ Remarks: Switching times may increase for $V_{CE} \text{ (Clamp)} > 0.8 V_{CES}$, higher T_J or increased R_G		100	ns
t_{ri}			200	ns
$E_{(on)}$			1.1	mJ
$t_{d(off)}$			900	ns
t_{fi}		12N100U1	1250	ns
t_{fi}		12N100AU1	950	ns
E_{off}		12N100U1	6	mJ
E_{off}		12N100AU1	4	mJ
R_{thJC}				1.25 K/W
R_{thCK}			0.25	K/W

Reverse Diode (FRED)		Characteristic Values		
		$(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$		
Symbol	Test Conditions	Min.	Typ.	Max.
V_F	$I_F = 8 \text{ A}, V_{GE} = 0 \text{ V}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$			2.75 V
I_{RM}	$I_F = I_{C90}, V_{GE} = 0 \text{ V}, -di/dt = 100 \text{ A}/\mu\text{s}$		6.5	A
t_{rr}	$V_R = 540 \text{ V}$ $I_F = 1 \text{ A}, -di/dt = 50 \text{ A}/\mu\text{s}, V_R = 30 \text{ V}$	$T_J = 125^\circ\text{C}$	120	ns
		$T_J = 25^\circ\text{C}$	50	60 ns
R_{thJC}				2.5 K/W

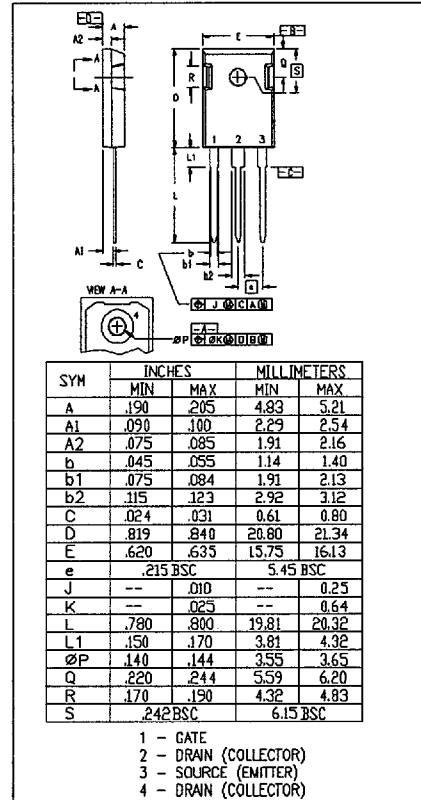
Min. Recommended Footprint
(Dimensions in inches and mm)



Data contained herein reflects measurements and characterization data from engineering lots. IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

TO-247 AD Outline



NOTE: This drawing will meet all dimensions requirement of JEDEC outlines TO-247 AD.

TO-247 SMD Outline

