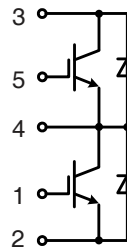


High Voltage IGBT Phase-Leg

FII24N170AH1

$V_{CES} = 1700V$
 $I_{C25} = 18A$
 $V_{CE(sat)} \leq 6V$
 $t_{fi(typ)} = 45ns$

(Electrically Isolated Tab)



ISOPLUS i4-PAC™

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ C$ to $150^\circ C$	1700	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ C$	18	A
I_{C90}	$T_C = 90^\circ C$	11	A
I_{F25}	$T_C = 25^\circ C$	24	A
I_{F90}	$T_C = 90^\circ C$	14	A
I_{CM}	$T_C = 25^\circ C$	75	A
SSOA (RBSOA)	$V_{GE} = 15V, T_{VJ} = 125^\circ C, R_G = 5\Omega$ Clamped Inductive Load	$I_{CM} = 50$ $V_{CES} \leq 1360$	A V
P_C	$T_C = 25^\circ C$	140	W

Symbol	Test Conditions ($T_J = 25^\circ C$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$V_{GE(th)}$	$I_C = 250\mu A, V_{CE} = V_{GE}$	3.0		5.0 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}, V_{GE} = 0V$ Note 2, $T_J = 125^\circ C$			100 μA 1.5 mA
I_{GES}	$V_{CE} = 0V, V_{GE} = \pm 20V$			± 100 nA
$V_{CE(sat)}$	$I_C = 16A, V_{GE} = 15V$, Note 1 $T_J = 125^\circ C$		4.5 4.8	6.0 V V
$t_{d(on)}$	Inductive load, $T_J = 25^\circ C$ $I_C = 24A, V_{GE} = 15V$ $V_{CE} = 600V, R_G = 39\Omega$ Note 2		48	ns
t_{ri}			60	ns
$t_{d(off)}$			200	ns
t_{fi}			45	ns
E_{off}			1.1	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ C$ $I_C = 24A, V_{GE} = 15V$ $V_{CE} = 600V, R_G = 39\Omega$ Note 2		40	ns
t_{ri}			60	ns
E_{on}			2.5	mJ
$t_{d(off)}$			220	ns
t_{fi}			55	ns
E_{off}		1.7	mJ	

Features

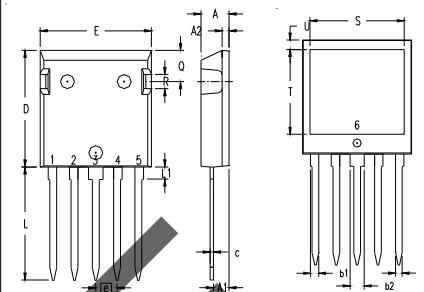
- NPT³ IGBT
- Low Saturation Voltage
- Positive Temperature Coefficient for Easy Paralleling
- Fast Switching
- Short Tail Current for Optimized Performance in Resonant Circuits
- SONIC-FRD™ Diode
- Fast Reverse Recovery
- Low Operating Forward Voltage
- Low Leakage Current
- ISOPLUS i4-PAC™ Package
- Isolated Back Surface
- Low Coupling Capacity Between Pins and Heatsink
- Enlarged Creepage Towards Heatsink
- Application Friendly Pinout
- low inductive current path
- High Reliability
- Industry Standard Outline
- UL registered, E 72873

Applications

- Single PhaseLeg
- Buck-Boost Chopper
- H-bridge
- Power Supplies
- Induction Heating
- Four Quadrant DC Drives
- Controlled Rectifier
- Three Phase Bridge
- AC Drives
- Controlled Rectifier

Symbol Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)		Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$I_C = 24\text{A}, V_{CE} = 10\text{V}, \text{Note 1}$	10	16	S
C_{ies}	$V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$		2400	pF
C_{oes}			150	pF
C_{res}			30	pF
$Q_{g(on)}$	$I_C = 16\text{A}, V_{GE} = 15\text{V}, V_{CE} = 0.5 \cdot V_{CES}$		105	nC
Q_{ge}			17	nC
Q_{gc}			30	nC
R_{thJC}			0.90	$^\circ\text{C/W}$
R_{thCS}		0.6		$^\circ\text{C/W}$

ISOPLUS i4-PAC™ OutLine



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.085	1.17	2.16
b	.045	.055	1.14	1.40
b1	.058	.068	1.47	1.73
b2	.100	.110	2.54	2.79
C	.020	.029	0.51	0.74
D	.819	.840	20.80	21.34
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
L	.780	.840	19.81	21.34
L1	.083	.102	2.11	2.59
Q	.210	.244	5.33	6.20
R	.100	.180	2.54	4.57
S	.660	.690	16.76	17.53
T	.590	.620	14.99	15.75
U	.065	.080	1.65	2.03

Reverse Sonic Diode (FRD)

Symbol Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)		Characteristic Values		
		Min.	Typ.	Max.
V_F	$I_F = 20\text{A}, V_{GE} = 0\text{V}, \text{Note 1}$		2.50	2.95 V
		$T_J = 125^\circ\text{C}$	2.50	V
I_{RM}	$I_F = 20\text{A}, V_{GE} = 0\text{V},$ $-di_F/dt = -450\text{A}/\mu\text{s}, V_R = 1200\text{V}$	$T_J = 125^\circ\text{C}$	23	A
t_{rr}			230	ns
R_{thJC}			1.6	$^\circ\text{C/W}$
R_{thCS}		0.6		$^\circ\text{C/W}$

Component

Symbol	Test Conditions	Maximum Ratings	
T_J		-55 ... +150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
F_C	Mounting Force	20..120 / 4.5..27	N/lb.
V_{ISOL}	50/60Hz, 1 Second	2500	V~

Symbol Test Conditions		Characteristic Values		
		Min.	Typ.	Max.
C_p	Coupling Capacity Between Shorted Pins and Mounting Tab in the Case		40	pF
d_s, d_A	Pin - Pin	1.7		mm
d_s, d_A	Pin - Backside Metal	5.5		mm
Weight			6	g

Notes:

1. Pulse test, $t \leq 300\mu\text{s}$, duty cycle, $d \leq 2\%$.
2. Switching times & energy losses may increase for higher V_{CE} (clamp), T_J or R_G .

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
	4,860,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	