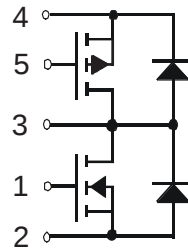


Polar™ P & N-Channel Power MOSFETs Common Drain Topology

FMP36-015P



	P CH.	N CH.
V_{DSS}	- 150V	150V
I_{D25}	- 22A	36A
$R_{DS(on)}$	110mΩ	40mΩ
$t_{rr(typ)}$	228ns	150ns

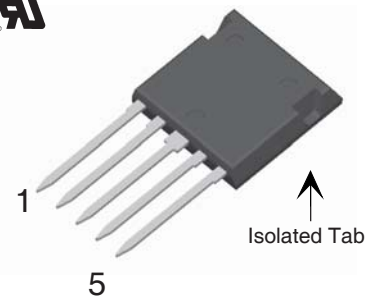
Symbol	Test Conditions	Maximum Ratings
T_J		- 55 ... +150 °C
T_{JM}		150 °C
T_{stg}		- 55 ... +150 °C
T_L	1.6mm (0.062 in.) from case for 10s	300 °C
V_{ISOL}	50/60HZ, RMS, t=1s, leads-to-tab	2500 V~
F_C	Mounting force	20..120 / 4.5..27 N/lb.

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
C_p	Coupling capacitance 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			9	g

P - CHANNEL

Symbol	Test Conditions	Maximum Ratings
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	-150 V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C , $R_{GS} = 1\text{M}\Omega$	-150 V
V_{GSS}	Continuous	± 20 V
V_{GSM}	Transient	± 30 V
I_{D25}	$T_C = 25^\circ\text{C}$	- 22 A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	- 90 A
I_A	$T_C = 25^\circ\text{C}$	- 36 A
E_{AS}	$T_C = 25^\circ\text{C}$	1.5 J
P_D	$T_C = 25^\circ\text{C}$	125 W

ISOPLUS i4-Pak™



Features

- Silicon chip on Direct-Copper Bond (DCB) substrate
 - UL recognized package
 - Isolated mounting surface
 - 2500V electrical isolation
- Avalanche rated
- Low Q_G
- Low Drain-to-Tab capacitance
- Low package inductance

Advantages

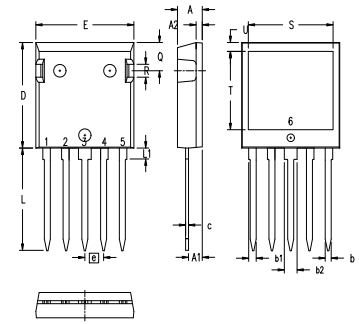
- Low gate drive requirement
- High power density
- Low drain to ground capacitance
- Fast switching

Applications

- DC and AC motor drives
- Class AB audio amplifiers
- Multi-phase DC to DC converters
- Industrial battery chargers
- Switching power supplies

Symbol	Test Conditions ² ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V, I_D = -250 \mu A$	-150		V
$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-2.5		-4.5 V
I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}, V_{GS} = 0V$ $T_J = 125^\circ\text{C}$			-10 μA -250 μA
$R_{DS(on)}$	$V_{GS} = -10V, I_D = -18A$, Note 1			110 m Ω
g_{fs}	$V_{DS} = -10V, I_D = -18A$, Note 1	11	19	S
C_{iss}	$V_{GS} = 0V, V_{DS} = -25V, f = 1\text{MHz}$		3100	pF
C_{oss}			610	pF
C_{rss}			100	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = -10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = -18A$ $R_G = 3.3\Omega$ (External)		21	ns
t_r			31	ns
$t_{d(off)}$			36	ns
t_f			15	ns
$Q_{g(on)}$	$V_{GS} = -10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = -18A$		55	nC
Q_{gs}			20	nC
Q_{gd}			18	nC
R_{thJC}				1.0 $^\circ\text{C/W}$
R_{thCS}		0.15		$^\circ\text{C/W}$

ISOPLUS i4-Pak™ Outline



NOTE: Bottom heatsink meets 3000 Volts AC 1 sec isolation to the other pins.

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

Ref: IXYS CO 0077 R0

Drain-Source Diode

Symbol	Test Conditions ²	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0V$			-22 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			-140 A
V_{SD}	$I_F = -18A, V_{GS} = 0V$, Note 1			-3.3 V
t_{rr}	$I_F = -18A, di/dt = 100 A/\mu s$		228	ns
Q_{RM}	$V_R = -75V, V_{GS} = 0V$		2.0	μC
I_{RM}		-17.6		A

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
4,850,072	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	

N - CHANNEL

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^{\circ}\text{C}$ to 150°C	150	V
V_{DGR}	$T_J = 25^{\circ}\text{C}$ to 150°C ; $R_{GS} = 1\text{M}\Omega$	150	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^{\circ}\text{C}$	36	A
I_{DM}	$T_C = 25^{\circ}\text{C}$, pulse width limited by T_{JM}	150	A
I_A	$T_C = 25^{\circ}\text{C}$	50	A
E_{AS}	$T_C = 25^{\circ}\text{C}$	1.0	J
P_D	$T_C = 25^{\circ}\text{C}$	125	W

Symbol	Test Conditions ² ($T_J = 25^{\circ}\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0\text{V}$, $I_D = 250\text{ }\mu\text{A}$	150		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$	3.0		5.5 V
I_{GSS}	$V_{GS} = \pm 20\text{ V}$, $V_{DS} = 0\text{V}$			$\pm 100\text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0\text{V}$ $T_J = 150^{\circ}\text{C}$			25 μA 250 μA
$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 31\text{A}$, (Note 1)		33	40 $\text{m}\Omega$
g_{fs}	$V_{DS} = 10\text{V}$, $I_D = 31\text{A}$, (Note 1)	14	24	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{ V}$, $f = 1\text{ MHz}$		2250	pF
C_{oss}			660	pF
C_{rss}			185	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 31\text{A}$ $R_G = 10\Omega$ (External)		27	ns
t_r			38	ns
$t_{d(off)}$			76	ns
t_f			35	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 31\text{A}$		70	nC
Q_{gs}			20	nC
Q_{gd}			38	nC
R_{thJC}				1.0 $^{\circ}\text{C/W}$
R_{thCS}		0.15		$^{\circ}\text{C/W}$

Source-Drain Diode
Characteristic Values
 $T_J = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Test Conditions ³	Min.	Typ.	Max.
I_S	$V_{GS} = 0V$			36 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			150 A
V_{SD}	$I_F = 62A$, $V_{GS} = 0V$, Note 1			1.5 V
t_{rr}	$I_F = 25A$, $-di/dt = 100A/\mu s$ $V_R = 100V$, $V_{GS} = 0V$		150	ns
Q_{RM}				
			2.0	μC

Note 1: Pulse test, $t \leq 300\mu s$, duty cycle, $d \leq 2\%$.

ADVANCE 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 objective result. IXYS reserves the right

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