

HiPerRF™

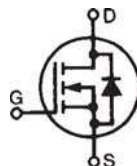
Power MOSFETs

F-Class: MegaHertz Switching

IXFK24N100F

IXFX24N100F

N-Channel Enhancement Mode
Avalanche Rated, Low Q_g , Low
Intrinsic R_g , High dV/dt , Low t_{rr}

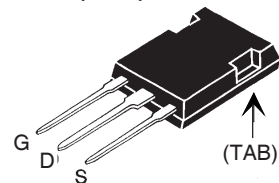


Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1000	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C , $R_{GS} = 1\text{M}\Omega$	1000	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	24	A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse Width Limited by T_{JM}	96	A
I_A	$T_C = 25^\circ\text{C}$	24	A
E_{AS}	$T_C = 25^\circ\text{C}$	3	J
dV/dt	$I_S \leq I_{DM}$, $di/dt \leq 100\text{A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}$, $R_G = 2\Omega$	15	V/ns
P_D	$T_C = 25^\circ\text{C}$	560	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6mm (0.062 in.) from Case for 10s	300	$^\circ\text{C}$
T_{SOLD}	Plastic Body for 10s	260	$^\circ\text{C}$
M_d	Mounting Torque (TO-264)	1.13/10	Nm/lb.in.
F_C	Mounting Force (PLUS247)	20..120 / 4.5..27	N/lb.
Weight	TO-264	10	g
	PLUS247	6	g

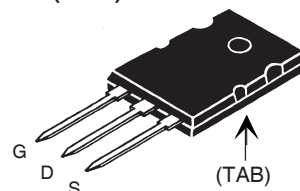
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0\text{V}$, $I_D = 1\text{mA}$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 8\text{mA}$	3.0		5.5 V
I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0\text{V}$ $T_J = 125^\circ\text{C}$			100 μA 3 mA
$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 0.5 \cdot I_{D25}$, Note 1			390 m Ω

$$\begin{aligned}
 V_{DSS} &= 1000\text{V} \\
 I_{D25} &= 24\text{A} \\
 R_{DS(on)} &\leq 390\text{m}\Omega \\
 t_{rr} &\leq 250\text{ns}
 \end{aligned}$$

PLUS 247™ (IXFX)



TO-264 AA (IXFK)



G = Gate D = Drain
S = Source TAB = Drain

Features

- RF capable MOSFETs
- Double metal process for low gate resistive
- Avalanche rated
- Low package inductance
- Fast intrinsic rectifier

Applications

- DC-DC converters
- Switched-mode and resonant-mode power supplies, >500kHz switching
- DC choppers
- 13.5 MHz industrial applications
- Pulse generation
- Laser drivers
- RF amplifiers

Advantages

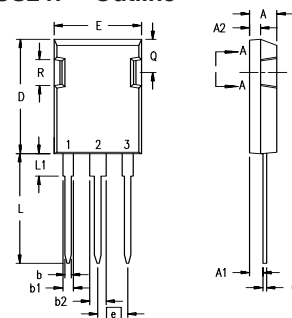
- PLUS 247™ package for clip or spring mounting
- Space savings
- High power density

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}, I_D = 0.5 \cdot I_{D25}$, Note 1	16	24	S
C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		6600	pF
C_{oss}			760	pF
C_{rss}			230	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\Omega$ (External)		22	ns
t_r			18	ns
$t_{d(off)}$			52	ns
t_f			11	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		195	nC
Q_{gs}			40	nC
Q_{gd}			100	nC
R_{thJC}				0.21 $^\circ\text{C/W}$
R_{thCK}			0.15	$^\circ\text{C/W}$

Source-Drain Diode		Characteristic Values		
$T_J = 25^\circ\text{C}$ Unless Otherwise Specified)		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$			24 A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			96 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{V}$, Note 1			1.5 V
t_{rr}	$I_F = 24\text{A}, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}, V_{GS} = 0\text{V}$			250 ns
Q_{RM}			1.4	μC
I_{RM}			10	A

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

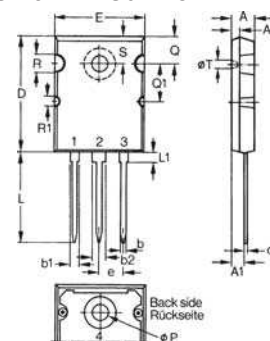
PLUS247™ Outline



Terminals: 1 - Gate
2 - Drain (Collector)
3 - Source (Emitter)
4 - Drain (Collector)

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A ₁	2.29	2.54	.090	.100
A ₂	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b ₁	1.91	2.13	.075	.084
b ₂	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	0.244
R	4.32	4.83	.170	.190

TO-264 AA Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

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	