

HiPerFET™ Power MOSFETs Q-CLASS

Single MOSFET Die

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

IXFK 27N80Q
IXFX 27N80Q

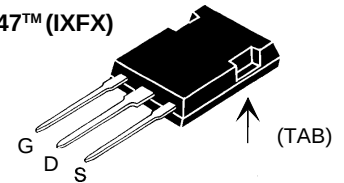
V_{DSS} = 800 V
I_{D25} = 27 A
R_{DS(on)} = 320 mΩ

t_{rr} ≤ 250 ns

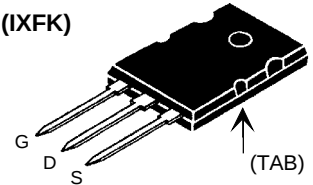


Symbol	Test Conditions	Maximum Ratings	
V _{DSS}	T _J = 25°C to 150°C	800	V
V _{DGR}	T _J = 25°C to 150°C; R _{GS} = 1 MΩ	800	V
V _{GS}	Continuous	±20	V
V _{GSM}	Transient	±30	V
I _{D25}	T _C = 25°C	27	A
I _{DM}	T _C = 25°C, pulse width limited by T _{JM}	108	A
I _{AR}	T _C = 25°C	27	A
E _{AR}	T _C = 25°C	60	mJ
E _{AS}	T _C = 25°C	2.5	J
dv/dt	I _S ≤ I _{DM} , di/dt ≤ 100 A/μs, V _{DD} ≤ V _{DSS} T _J ≤ 150°C, R _G = 2 Ω	5	V/ns
P _D	T _C = 25°C	500	W
T _J		-55 ... +150	°C
T _{JM}		150	°C
T _{stg}		-55 ... +150	°C
T _L	1.6 mm (0.063 in.) from case for 10 s	300	°C
M _d	Mounting torque	TO-264	0.4/6 Nm/lb.in.
Weight	PLUS 247		6 g
	TO-264		10 g

PLUS247™ (IXFX)



TO-264 AA (IXFK)



G = Gate
S = Source

D = Drain
TAB = Drain

Features

- IXYS advanced low Q_g process
- Low gate charge and capacitances
 - easier to drive
 - faster switching
- International standard packages
- Low R_{DS(on)}
- Rated for unclamped Inductive load switching (UIS) rated
- Molding epoxies meet UL 94 V-0 flammability classification

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control
- Temperature and lighting controls

Advantages

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

Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V _{DSS}	V _{GS} = 0 V, I _D = 1 mA	800		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 4 mA	2.0		4.5 V
I _{GSS}	V _{GS} = ±20 V, V _{DS} = 0			±100 nA
I _{DSS}	V _{DS} = V _{DSS} V _{GS} = 0 V T _J = 125°C			100 μA 2 mA
R _{DS(on)}	V _{GS} = 10 V, I _D = 0.5 • I _{D25} Note 1			320 mΩ

Symbol	Test Conditions		Characteristic Values (T _J = 25°C, unless otherwise specified)		
			min.	typ.	max.
g_{fs}	V _{DS} = 10 V; I _D = 0.5 • I _{D25}	Note 1	20	27	S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz			7600	pF
C_{oss}				750	pF
C_{rss}				120	pF
t_{d(on)}	V _{GS} = 10 V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25} R _G = 1 Ω (External),			20	ns
t_r				28	ns
t_{d(off)}				50	ns
t_f				13	ns
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25}			170	nC
Q_{gs}				47	nC
Q_{gd}				65	nC
R_{thJC}				0.26	K/W
R_{thCK}				0.15	K/W

Source-Drain Diode		Characteristic Values (T _J = 25°C, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
I_S	V _{GS} = 0 V			27 A
I_{SM}	Repetitive; pulse width limited by T _{JM}			108 A
V_{SD}	I _F = I _S , V _{GS} = 0 V, Note 1			1.5 V
t_{rr}	I _F = I _S , -di/dt = 100 A/μs, V _R = 100 V		1.3	250 ns
Q_{RM}				μC
I_{RM}				8 A

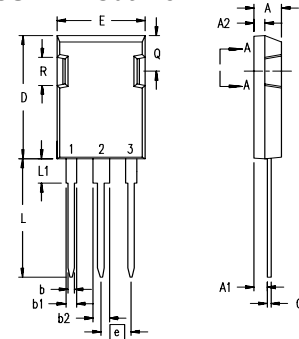
Note: 1. Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %

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	6,306,728B1
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	

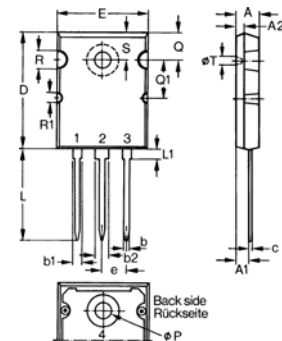
PLUS 247™ Outline



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

Dim.	Millimeter Min.	Max.	Inches 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	.244
R	4.32	4.83	.170	.190

TO-264 AA Outline



Dim.	Millimeter Min.	Max.	Inches 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