

HiPerFET™ Power MOSFETs

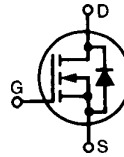
N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low t_{rr}

IXFK33N50
IXFK35N50

V_{DSS}	I_{D25}	$R_{DS(on)}$
500 V	33 A	0.16 Ω
500 V	35 A	0.15 Ω

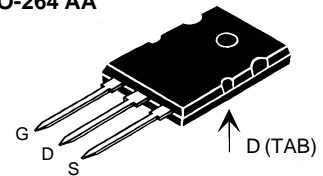
$t_{rr} \leq 250$ ns

Preliminary data



Symbol	Test Conditions	Maximum Ratings	TO-264 AA
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1$ M Ω	500	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	33N50	33
		35N50	35
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	33N50	132
		35N50	140
I_{AR}	$T_C = 25^\circ\text{C}$	33N50	30
		35N50	35
E_{AS}	$I_D = 32$ A	2.5	J
E_{AR}	$T_C = 25^\circ\text{C}$	45	mJ
dv/dt	$I_S \leq I_{DM1}$, $di/dt \leq 100$ A/ μs , $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2$ Ω	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	416	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.063 in) from case for 10 s	300	$^\circ\text{C}$
M_d	Mounting torque	0.9/6	Nm/lb.in.
Weight		10	g

TO-264 AA



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

Features

- International standard packages
- Molding epoxies meet UL 94 V-0 flammability classification
- Low $R_{DS(on)}$ HDMOS™ process
- Unclamped Inductive Switching (UIS) rated
- Fast intrinsic rectifier

Applications

- DC-DC converters
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0$ V, $I_D = 1$ mA temperature coefficient	500	0.102	V %/K
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4$ mA temperature coefficient	2	-0.206	V %/K
I_{GSS}	$V_{GS} = \pm 20$ V _{DC} , $V_{DS} = 0$			± 200 nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0$ V	$T_J = 25^\circ\text{C}$		200 μA
		$T_J = 125^\circ\text{C}$		2 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 16.5$ A Pulse test, $t \leq 300$ μs , duty cycle $d \leq 2$ %	33N50		0.16 Ω
		35N50		0.15 Ω

IXYS reserves the right to change limits, test conditions, and dimensions.

97517D (07/00)

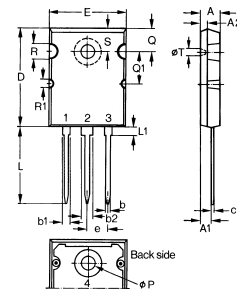
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Symbol	Test Conditions	Characteristic Values			
		(T _J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	V _{DS} = 10 V; I _D = 0.5 • I _{D25} , pulse test	18	28		S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		5200	5700	pF
C_{oss}			640	750	pF
C_{rss}			240	310	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),		35	45	ns
t_r			42	50	ns
t_{d(off)}			110	140	ns
t_f			23	35	ns
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25}		227		nC
Q_{gs}			29		nC
Q_{gd}			110		nC
R_{thJC}				0.3	K/W
R_{thCK}		0.15			K/W

Symbol	Test Conditions	Characteristic Values				
		(T _J = 25°C, unless otherwise specified)				
		min.	typ.	max.		
I_s	V _{GS} = 0 V			33	A	
I_{SM}	Repetitive; pulse width limited by T _{JM}			132	A	
V_{SD}	I _F = 100 A, V _{GS} = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.5	V	
t_{rr}	I _F = I _S , -di/dt = 100 A/μs, V _R = 100 V		0.75	250	ns	
Q_{RM}			7		μC	
I_{RM}						A

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