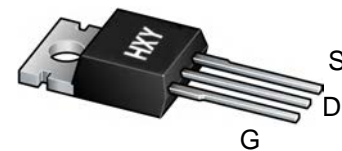




Description

The HIRF530NPBF uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



TO-220C

General Features

$V_{DS} = 100V$ $I_D = 17A$

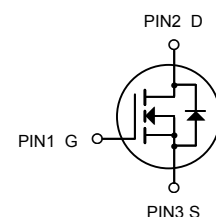
$R_{DS(ON)} < 120m\Omega$ @ $V_{GS} = 10V$

Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Brand	Units Tube
HIRFZ44NPBF	TO-220C	HXY MOSFET	50

Absolute Maximum Ratings ($T_C = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current $T_C = 25^\circ C$	17	A
I_D	Continuous Drain Current $T_C = 100^\circ C$	8	A
I_{DM}	Pulsed Drain Current note1	50	A
EAS	Single Pulse Avalanche Energy ³	250	mJ
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	62.5	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Ambient ¹	1.42	$^\circ C/W$



Electrical Characteristics ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^{\circ}\text{C}$			5	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.5	2.0	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	$V_{GS}=10V, I_D=8A$		80	120	m Ω
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1.0\text{MHz}$		1331		pF
C_{oss}	Output Capacitance			276		pF
C_{rss}	Reverse Transfer Capacitance			88		pF
Q_g	Total Gate Charge	$V_{DD}=80V, I_D=18A, V_{GS}=10V$		53		nC
Q_{gs}	Gate-Source Charge			6		nC
Q_{gd}	Gate-Drain("Miller") Charge			29		nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=50V, I_D=18A, R_G=25\Omega$		35		ns
t_r	Turn-on Rise Time			45		ns
$t_{d(off)}$	Turn-off Delay Time			187		ns
t_f	Turn-off Fall Time			64		ns
I_S	Maximum Continuous Drain to Source Diode Forward Current				18	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current				50	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_{SD}=18A$			2	V
t_{rr}	Reverse Recovery Time	$V_{GS}=0V, I_S=18A, di/dt=100A/\mu s$		102		ns
Q_{rr}	Reverse Recovery Charge			0.5		μC

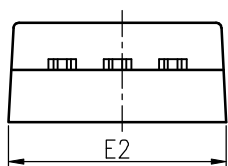
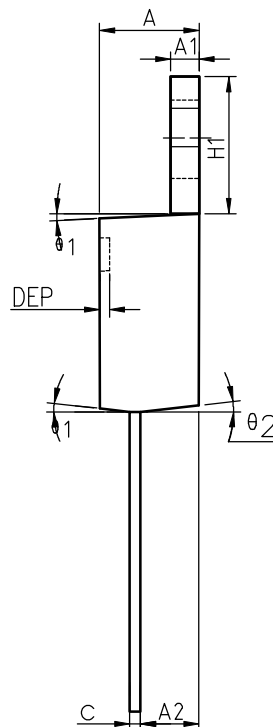
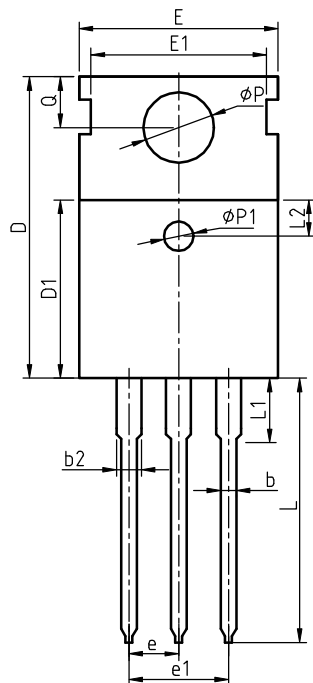
Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. $I_{AS}=15A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$

3. Pulse Test: Pulse Width $\leq 325\mu s$, Duty Cycle $\leq 1\%$



Package Information TO-220C



COMMON DIMENSIONS

SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.27	1.30	1.33	0.050	0.051	0.052
A2	2.35	2.40	2.50	0.093	0.094	0.098
b	0.77	0.80	0.90	0.030	0.031	0.035
b2	1.17	1.27	1.36	0.046	0.050	0.054
c	0.48	0.50	0.56	0.019	0.020	0.022
D	15.40	15.60	15.80	0.606	0.614	0.622
D1	9.00	9.10	9.20	0.354	0.358	0.362
DEP	0.05	0.10	0.20	0.002	0.004	0.008
E	9.80	10.00	10.20	0.386	0.394	0.402
E1	-	8.70	-	-	0.343	-
E2	9.80	10.00	10.20	0.386	0.394	0.402
e		2.54	BSC		0.100	BSC
e1		5.08	BSC		0.200	BSC
H1	6.40	6.50	6.60	0.252	0.256	0.260
L	12.75	13.50	13.65	0.502	0.531	0.537
L1	-	3.10	3.30	-	0.122	0.130
L2		2.50	REF		0.098	REF
P	3.50	3.60	3.63	0.138	0.142	0.143
P1	3.50	3.60	3.63	0.138	0.142	0.143
Q	2.73	2.80	2.87	0.107	0.110	0.113
θ 1	5°	7°	9°	5°	7°	9°
θ 2	1°	3°	5°	1°	3°	5°
θ 3	1°	3°	5°	1°	3°	5°



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