



N-Channel Enhancement Mode Power MOSFET

Features

$V_{DS} = 30V, I_D = 48A$

$R_{DS(ON)} @ V_{GS} = 10V, \text{MAX } 9.5m\Omega$

$R_{DS(ON)} @ V_{GS} = 4.5V, \text{MAX } 14m\Omega$

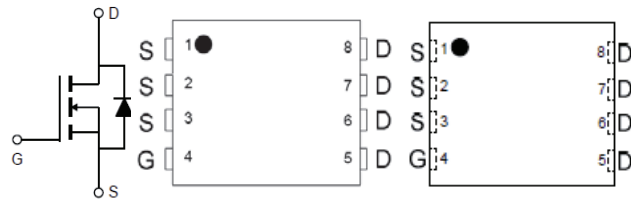
General Description

HX7444FL/FN uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low

gate charge. It can be used in a wide variety of applications.

Package Information

Pin Configurations



PDFN3*3/TDFN3*3

Top View

Bottom View

Side View

Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.			
A2	0-0.05		0-0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0-0.100		0-0.004	
L3	0-0.100		0-0.004	
H	0.315	0.515	0.012	0.020
Ø	9°	13°	9°	13°

PDFN3.3*3.3-8L

Top View

Bottom View

Side View

RECOMMENDED LAND PATTERN

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031
A1	—	—	0.05	—	—	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	3.20	3.30	3.40	0.126	0.130	0.134
D1	2.15	2.25	2.35	0.085	0.089	0.093
E	3.20	3.30	3.40	0.126	0.130	0.134
E1	2.13	2.23	2.33	0.084	0.088	0.092
E2	0.30	0.40	0.50	0.012	0.016	0.020
E3	0.48	0.58	0.68	0.019	0.023	0.027
e	0.65 ESC			0.026 ESC		
L	0.30	0.40	0.50	0.012	0.016	0.020

TDFN3.3*3.3-8L

**● Absolute Maximum Ratings @ $T_A=25^\circ\text{C}$ unless otherwise noted**

Parameter	Symbol	Ratings	Unit	
Drain-Source Voltage	V_{DSS}	30	V	
Gate-Source Voltage	V_{GSS}	± 20	V	
Drain Current (Continuous) *AC	I_D	$T_A=25^\circ\text{C}$	48	A
		$T_A=100^\circ\text{C}$	30	
Drain Current (Pulse) *B	I_{DM}	192	A	
Single Pulse Avalanche Energy (L=0.1mH, IAS=30A, , T _J =25°C)	E_{AS}	45	mJ	
Power Dissipation	P_D	35	W	
Operating Temperature/ Storage Temperature	T_J/T_{STG}	-55~150	°C	

● Electrical Characteristics @ $T_A=25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = 250\mu A$	1.2	1.6	2.5	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	--	--	± 100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 15A$	--	7.2	9.5	m Ω
	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 8A$	--	10.5	14	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = 10V, I_D = 8A$	--	9.5	--	S
Diode Forward Voltage	V_{SD}	$I_{SD} = 1A, V_{GS} = 0V$	--	--	1	V
Diode Forward Current	I_S		--	--	48	A
Switching						
Total Gate Charge	Q_g	$V_{DS} = 15V, I_D = 20A,$ $V_{GS} = 4.5V$	--	7.5	--	nC
Gate-Source Charge	Q_{gs}		--	1.3	--	nC
Gate-Drain Charge	Q_{gd}		--	4.5	--	nC
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, V_{GS} = 10V,$ $R_{GEN} = 3.3\Omega, I_D = 15A$	--	4.8	--	ns
Turn-on Rise Time	t_r		--	12.5	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	27.6	--	ns
Turn-Off Fall Time	t_f		--	8.2	--	ns
Dynamic						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$	--	680	--	pF
Output Capacitance	C_{oss}		--	150	--	pF
Reverse Transfer Capacitance	C_{rss}		--	70	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the $t_s \leq 10s$ junction to ambient thermal resistance rating.



● Typical Performance Characteristics

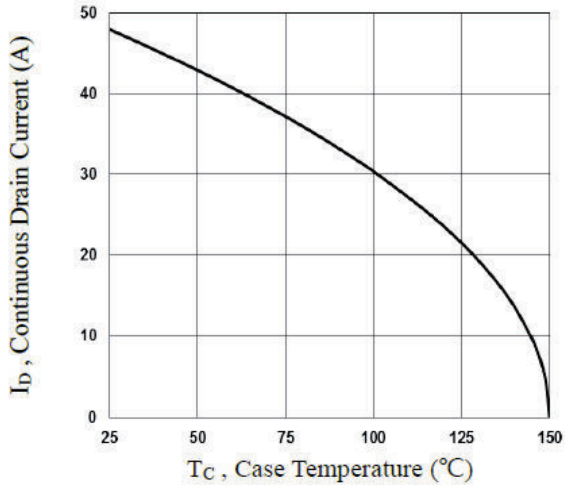


Fig.1 Continuous Drain Current vs. T_C

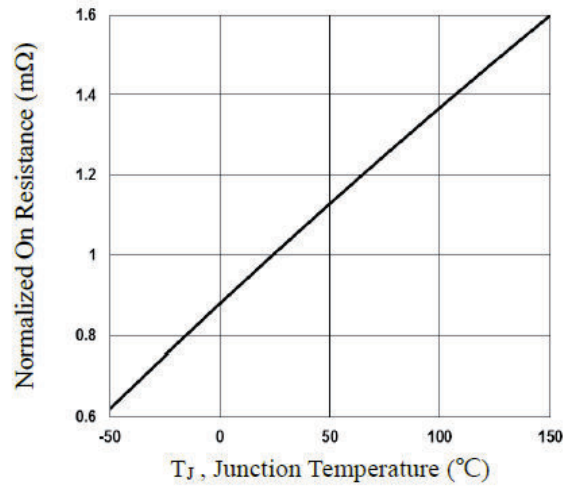


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

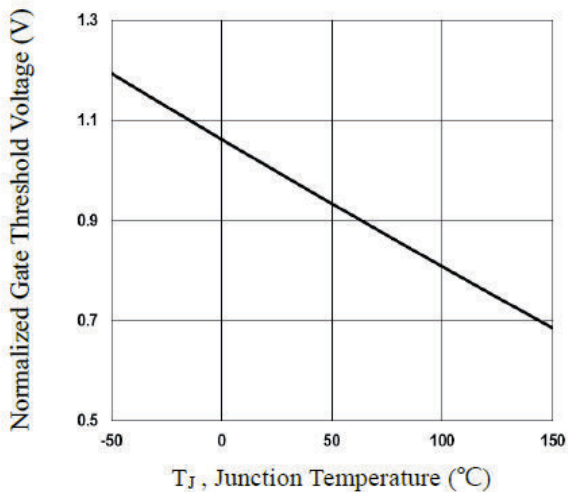


Fig.3 Normalized V_{th} vs. T_J

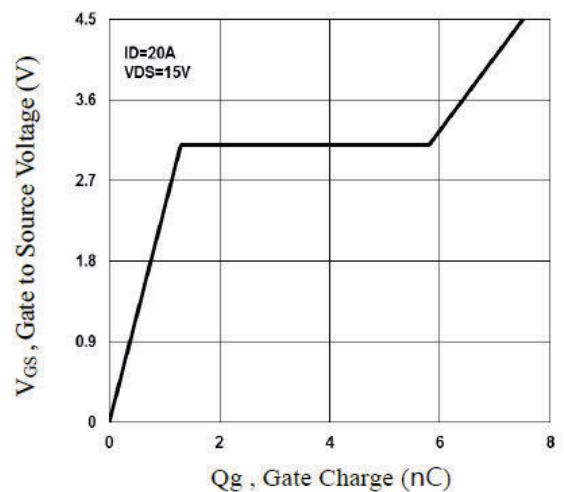


Fig.4 Gate Charge Waveform

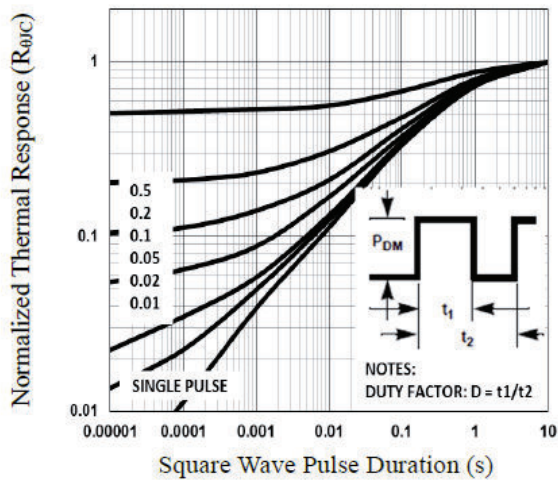


Fig.5 Normalized Transient Impedance

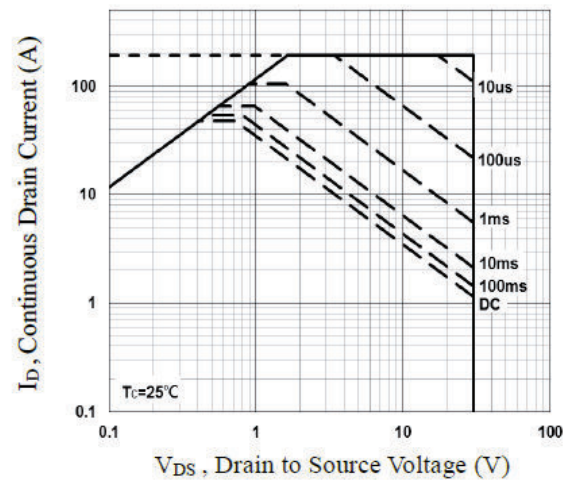


Fig.6 Maximum Safe Operation Area

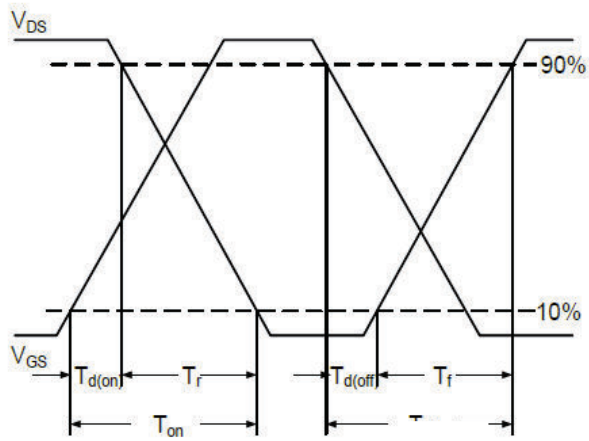


Fig.7 Switching Time Wavefo...

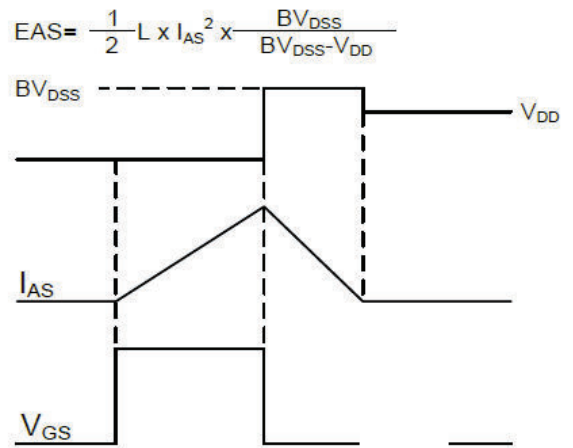


Fig.8 EAS Waveform



DISCLAIMER

HUAXIN SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. HUAXIN DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.