

**FH8815DC****N-Channel Trench Power MOSFET****◆ General Description**

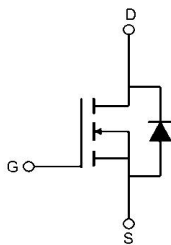
The FH8815DC is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance.

◆ Features

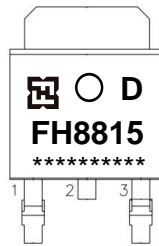
- $R_{DS(ON)} \leq 90 \text{ m}\Omega @ V_{GS}=10\text{V}$
- $R_{DS(ON)} \leq 110 \text{ m}\Omega @ V_{GS}=4.5\text{V}$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

◆ Applications

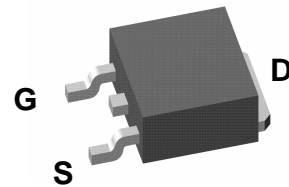
- Power Management
- DC/DC Converter
- Load Switch



Schematic diagram

TO-252

Marking and pin assignment



TO-252 top view

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		150	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current ^{note5}	$T_C = 25^\circ\text{C}$	18	A
I_D	Continuous Drain Current ^{note5}	$T_C = 100^\circ\text{C}$	12	A
I_{DM}	Pulsed Drain Current ^{note3}		72	A
P_D	Power Dissipation ^{note2}	$T_C = 25^\circ\text{C}$	75	W
I_{AS}	Avalanche Current ^{note3,6}		5.5	A
E_{AS}	Single Pulse Avalanche Energy ^{note3,6}		75	mJ
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.2	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ^{note1,4}		59	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ\text{C}$

◆ Electrical Characteristics (T_J=25°C, unless otherwise noted)

Static

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	150	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.5	-	3.0	V
I _{GSS}	Gate Body Leakage	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 150V, V _{GS} = 0V	-	-	1	μA
R _{DS(ON)}	Drain-Source On On-Resistance	V _{GS} = 10V, I _D = 10A	-	75	90	mΩ
		V _{GS} = 4.5V, I _D = 8 A	-	84	110	
V _{SD}	Diode Forward Voltage	I _S = 1A, V _{GS} = 0V	-	0.72	1	V

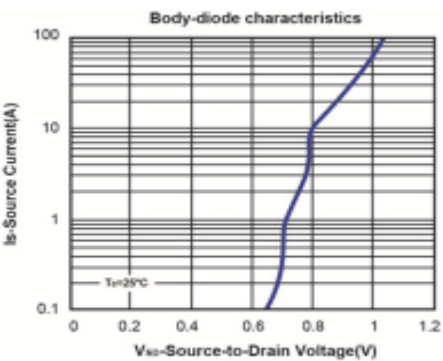
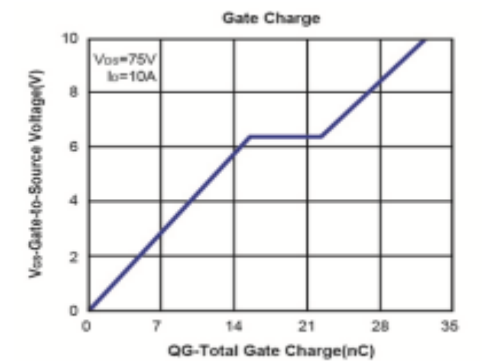
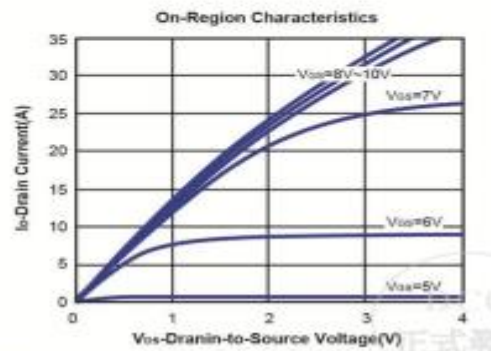
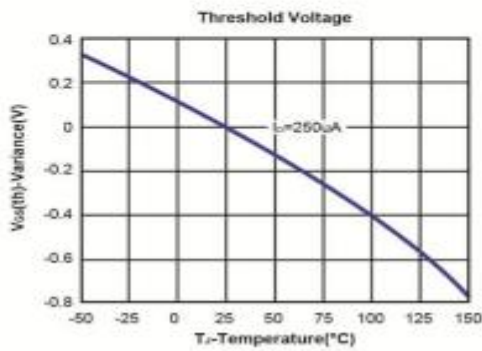
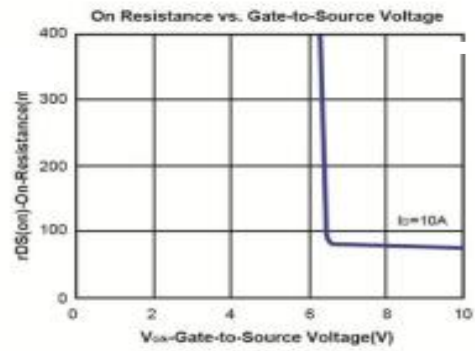
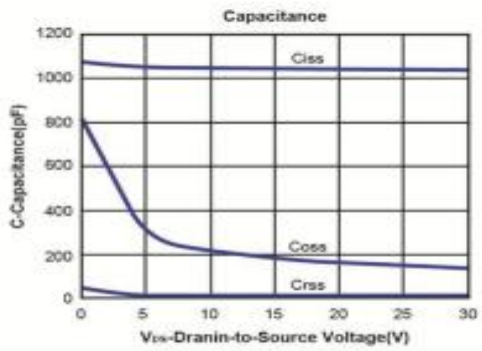
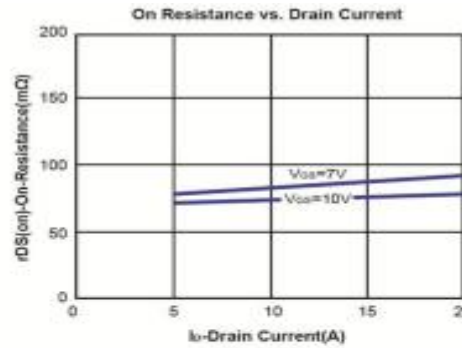
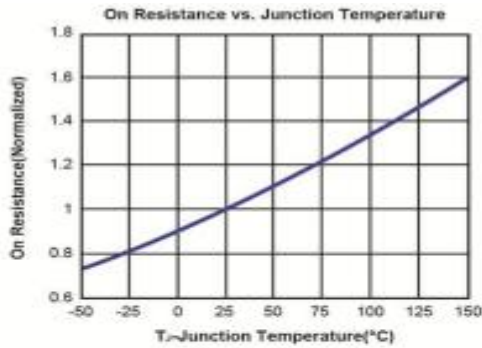
Dynamic

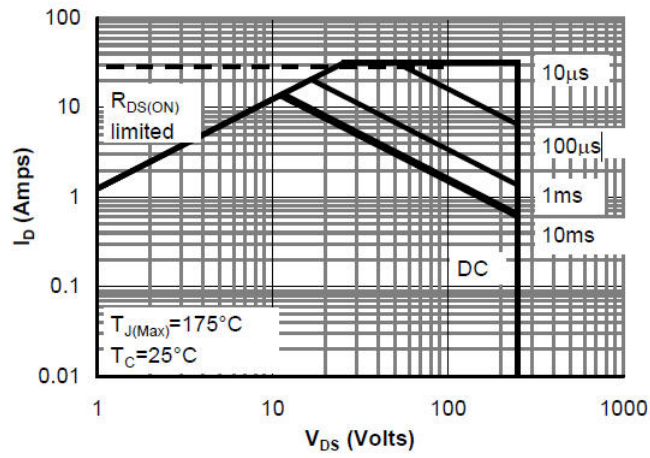
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge	V _{DD} = 75V V _{GS} = 10V I _D = 10A	-	32.3	-	nC
Q _{gs}	Gate-Source Charge		-	15.7	-	
Q _{gd}	Gate-Drain Charge		-	6.62	-	
C _{iss}	Input Capacitance	V _{DS} = 30V V _{GS} = 0V f = 1MHz	-	1039	-	pF
C _{oss}	Output Capacitance		-	136	-	
C _{rss}	Reverse Transfer Capacitance		-	14	-	
t _{d(on)}	Turn-On Delay Time	V _{DD} = 75V V _{GS} = 10V R _G = 3Ω I _D = 1A R _L = 75 Ω	-	24.9	-	ns
t _r	Turn-On Rise Time		-	6.02	-	
t _{d(off)}	Turn-Off Delay Time		-	49.9	-	
t _f	Turn-Off Fall Time		-	20	-	

Notes:

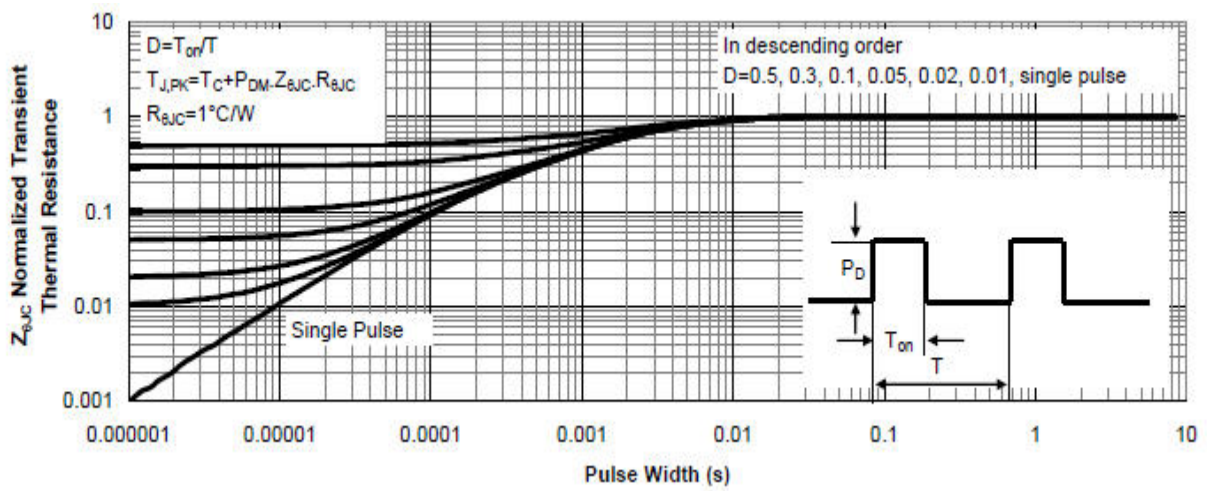
1. The value of R_{θJC} is measured in a still air environment with T_A = 25°C and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
2. The power dissipation P_D is based on T_{J(MAX)} = 150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
3. Single pulse width limited by junction temperature T_{J(MAX)} = 150°C.
4. The R_{θJA} is the sum of the thermal impedance from junction to case R_{θJC} and case to ambient.
5. The maximum current rating is package limited.
6. The EAS data shows Max. rating. The test condition is V_{DS} = 75V, V_{GS} = 10V, L = 5mH

◆ Typical Characteristics ($T_J = 25^\circ\text{C}$ Noted)



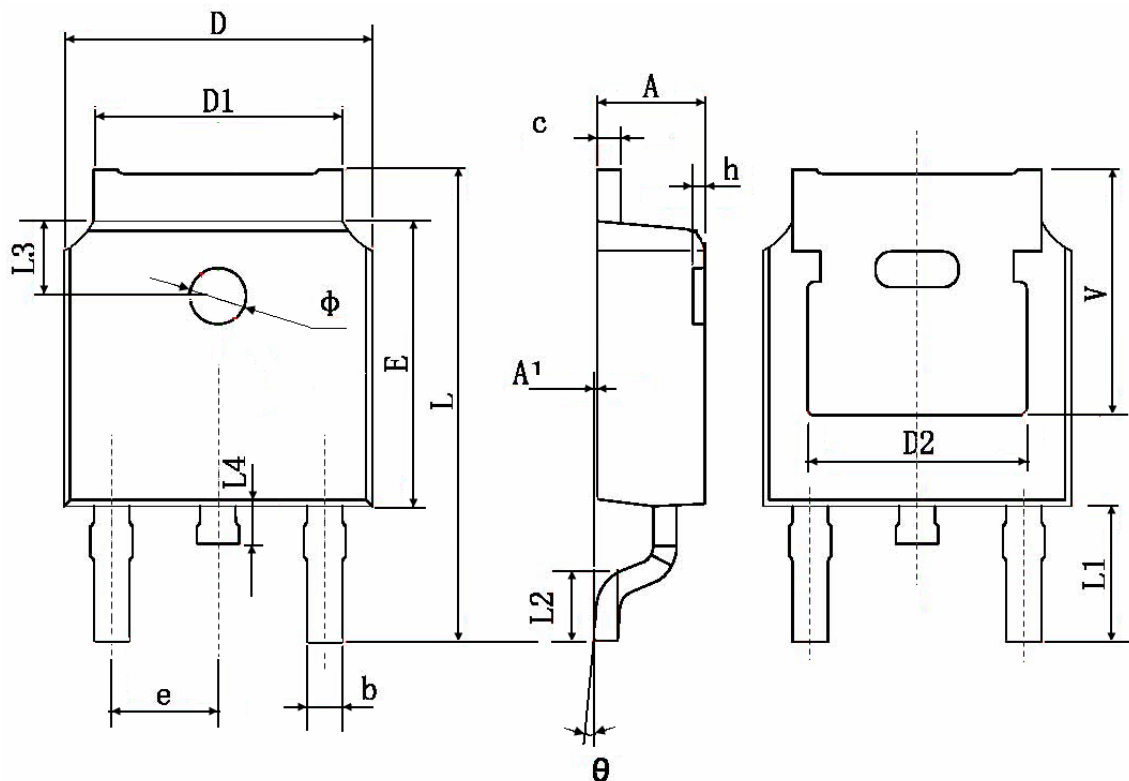


Maximum Forward Biased Safe Operating Area



Normalized Maximum Transient Thermal Impedance

Package Information : TO-252



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	