

FH75N04D

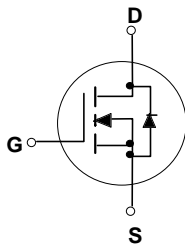
40V N-Channel MOSFET

General Description

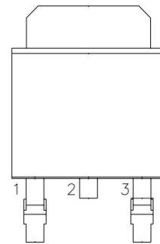
The FH75N04D is the high cell density trenched N-Channel MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The FH75N04D meet the ROHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

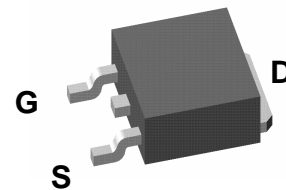
TO-252



Schematic diagram



Marking and pin assignment



TO-252 top view

Featuration

- 40V/75A, $R_{DS(ON)} = 6.5m\ \Omega$ $V_{GS} = 10V$ (MAX.)
- 40V/75A, $R_{DS(ON)} = 9m\ \Omega$ $V_{GS} = 4.5V$ (MAX.)
- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Advanced high cell density Trench technology
- TO-252 package design

Applications

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch

Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Units
Drain to Source Voltage	V_{DSS}	40	V
Gate to Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	25°C	I_D	75
	70°C		58
Pulsed Drain Current	$I_{D(pulse)}$	150	A
Avalanche Current	I_{AS}	47	A
Maximum Power Dissipation	25°C	P_D	52
Single Pulse Avalanche Energy	EAS		110
Operating Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55-+150	$^\circ\text{C}$
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)	T_L	260	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

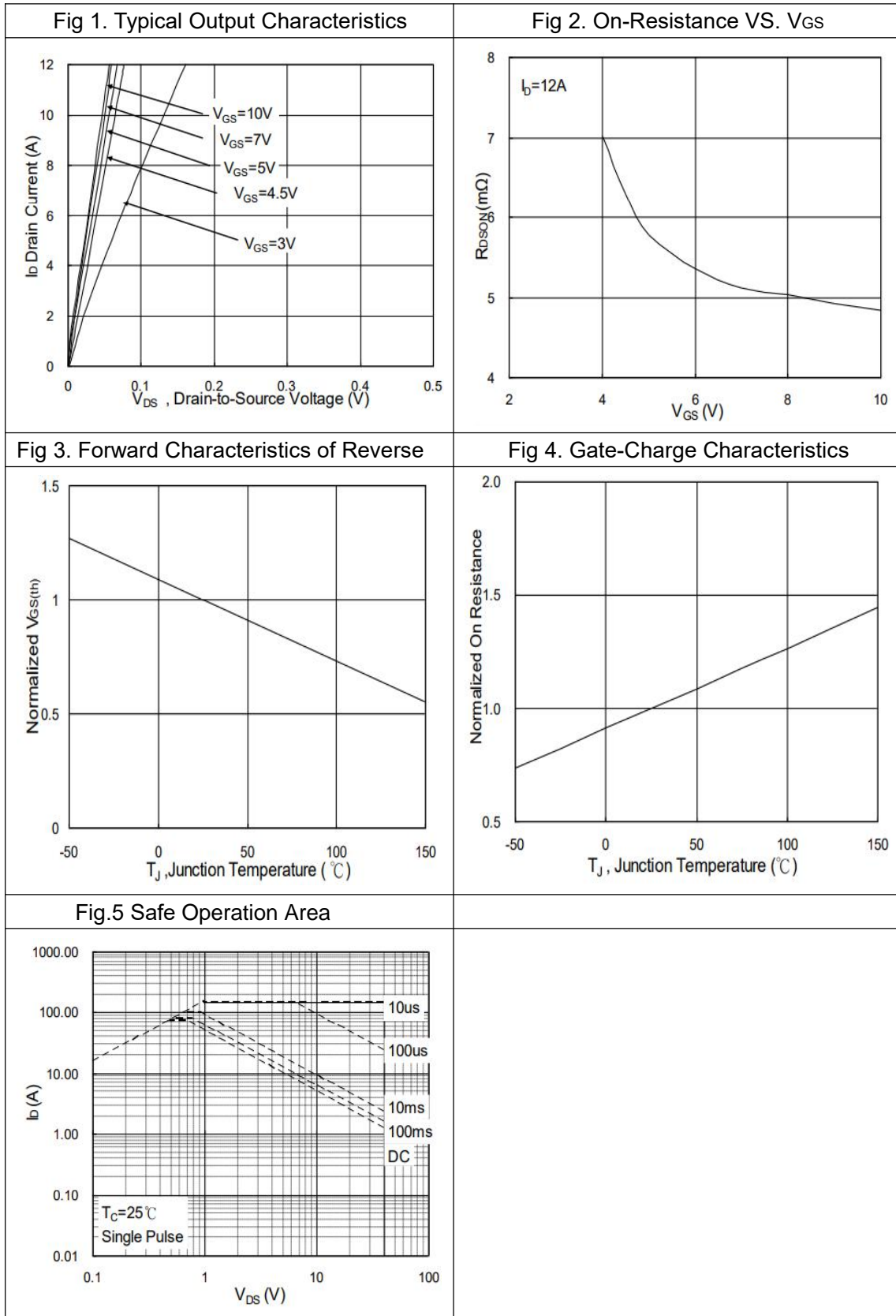
Electrical Characteristics (TA = 25°C)

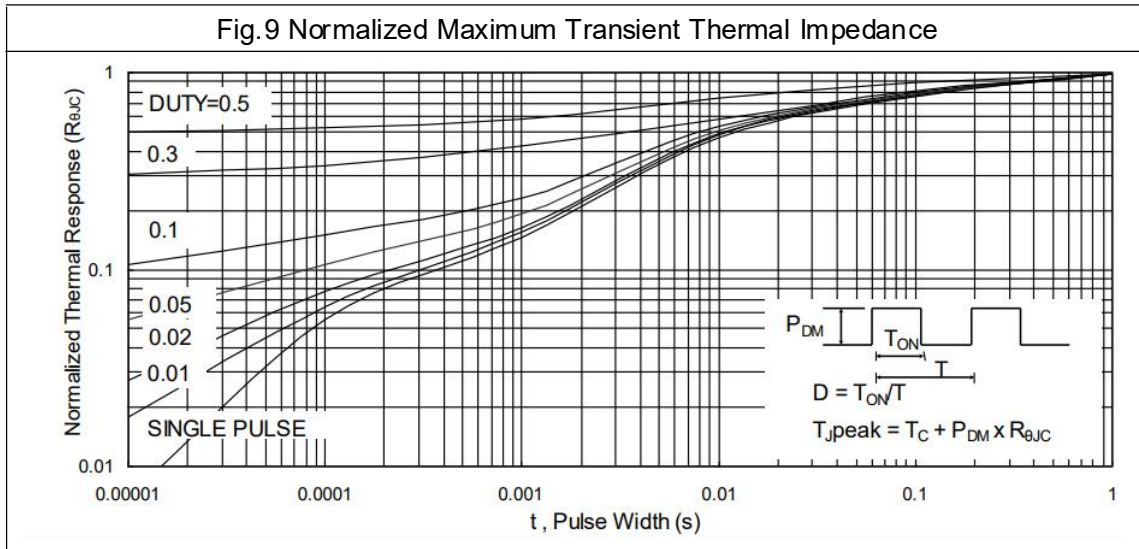
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX	Units
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =250uA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 32V, V _{GS} =0V T _J =25°C			1	uA
		V _{DS} = 32V, V _{GS} =0V T _J =55°C			5	uA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate threshold voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		2.5	V
Drain to Source On-state Resistance	R _{DS(ON)}	V _{GS} =10V, I _D = 5.0A		5	6.5	mΩ
		V _{GS} = 4.5V, I _D = 5.0A		7	9	mΩ
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.8	1	V
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V , f=1MHz		1.4		Ω
Input Capacitance	C _{ISS}	V _{DS} =15V , V _{GS} =0V , f=1MHz		3354		pF
Output Capacitance	C _{OSS}			275		pF
Reverse Transfer Capacitance	C _{RSS}			204		pF
Total Gate Charge (10V)	Q _G	V _{DD} =20V , V _{GS} =4.5V , I _D =12A		28		nC
Gate-Source Charge	Q _{GS}			7.9		nC
Gate-Drain Charge	Q _{GD}			12.5		nC
Turn-On Delay Time	T _{d(on)}	V _{DD} =15V, V _{GS} =10V R _G =3.3Ω, I _D =1A		20.2		pF
Rise Time	T _r			11.8		
Turn-Off Delay Time	T _{d(off)}			84.8		
Fall Time	T _f			8.6		

Note : 1. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.

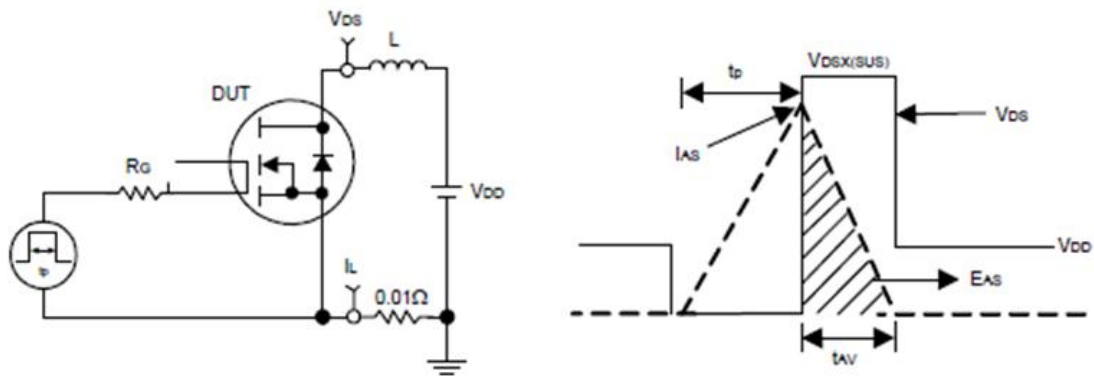
2. Static parameters are based on package level with recommended wire-bonding.

Typical Characteristics

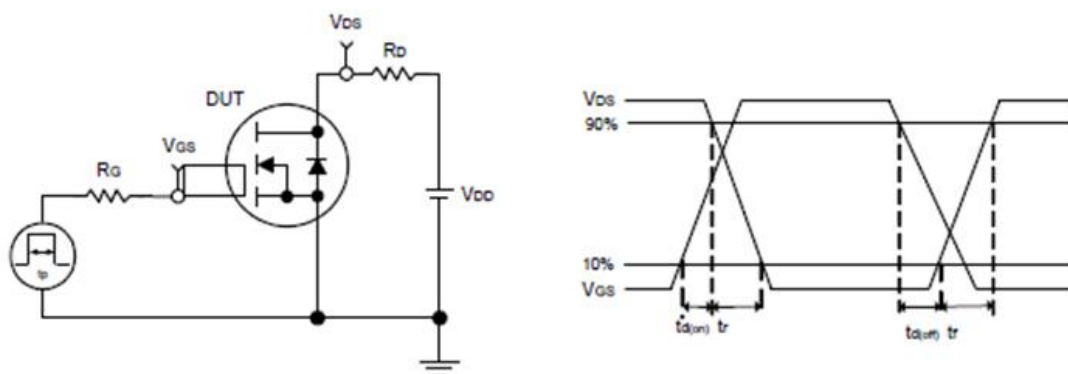




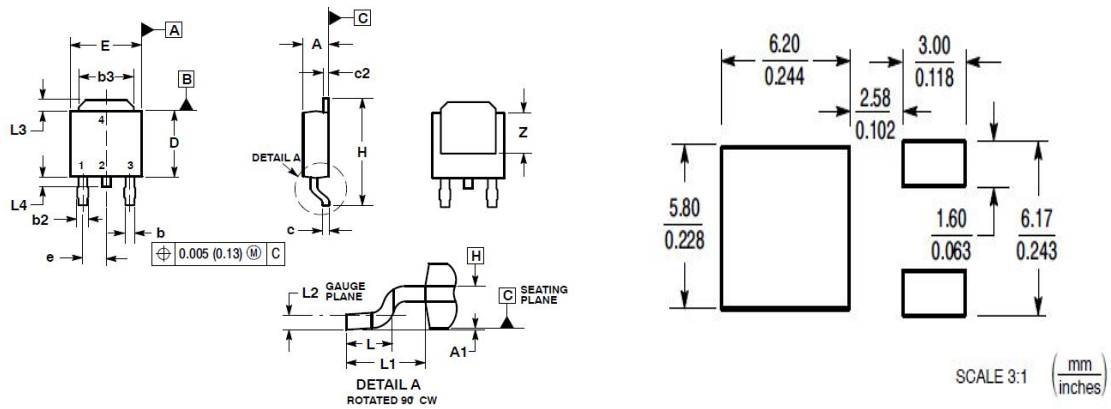
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Package Dimensions: TO-252



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.030	0.045	0.76	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055		1.40	
L1	0.108 REF		2.74 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	---	0.040	---	1.01
Z	0.155	---	3.93	---