N-Channel 60-V (D-S) MOSFET

FEATURES

$R_{DS(ON)} \leqq 11.5m\Omega @ V_{GS}=10V$

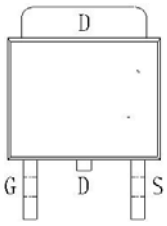
high density cell design for extremely low $R_{DS(ON)}$

Exceptional on-resistance and maximum DC current capability

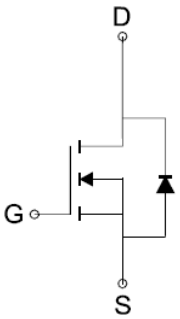
GENERAL DESCRIPTION

The FS75N06 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

PIN CONFIGURATION



TO252



N-Channel MOSFET

Absolute Maximum Ratings (T_A=25℃ Unless Otherwise Noted)

Parameter	Symbol	Limit	Units
Drain-Source Voltage	VDS	60	V
Gate-Source Voltage	VGS	±20	V
Drain Current-Continuous	ID	75	A
Drain Current-Pulsed a	IDM	300	A
Maximum Power Dissipation @ TC = 25℃	PD	110	W
-Derate above 25℃		1.1	W/℃
Single Pulsed Avalanche Energy [d]	EAS	450	mJ
Operating and Store Temperature Range	TJ,Tstg	-55 to 175	C

Thermal Characteristics

Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Case	RqJC	1.36	℃/W
Thermal Resistance, Junction-to-Ambient	RqJA	47.5	℃/W

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

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	60			V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	2	3	4	V
IGSS	Gate Leakage Current	VDS=0V, VGS=±20V			±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=60V, VGS=0V			1	μA
RDS(ON)	Drain-Source On-State Resistance	VGS=10V, ID= 50A		9.1	11.5	mΩ
VSD	Diode Forward Voltage	IS=2.7A, VGS=0V		0.72	1.1	V
DYNAMIC [c]						
Qg	Total Gate Charge(10V)	VDS=50V,ID=40A VGS=10V		50		nC
Qgs	Gate-Source Charge			12		
Qgd	Gate-Drain Charge			16		
Ciss	Input capacitance	VDS=25V, VGS=0V, f=1.0MHz		2350		pF
Coss	Output Capacitance			237		
Crss	Reverse Transfer Capacitance			205		
SwitchingTimes						
td(on)	Turn-on Delay Time	VDD=60V,ID=40A,RL=15ΩVGS=10V,RG=2.5Ω		16		nS
tr	Turn-on Rise Time			10		nS
td(off)	Turn-Off Delay Time			45		nS
tf	Turn-Off Fall Time			12		nS
Source-DrainDiodeCharacteristics						
VSD	Forward On Voltage(Note 1)	TJ=25℃,ISD=20A,VGS=0V		0.6	1	V

Notes Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.
2.Surface Mounted on FR4 Board, t≤10 sec.
3.Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.
4.Guaranteed by design, not subject to production
5.EAScondition : Tj=25° C,VDD=30V,VG=10V,L=0.5mH,Rg=25Ω

- **Typical Performance Characteristics** (T =25℃)

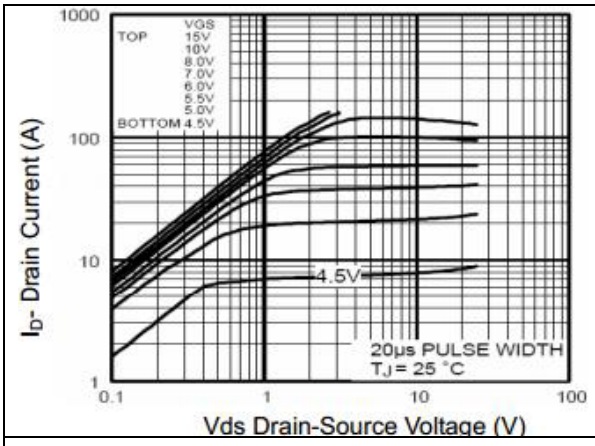
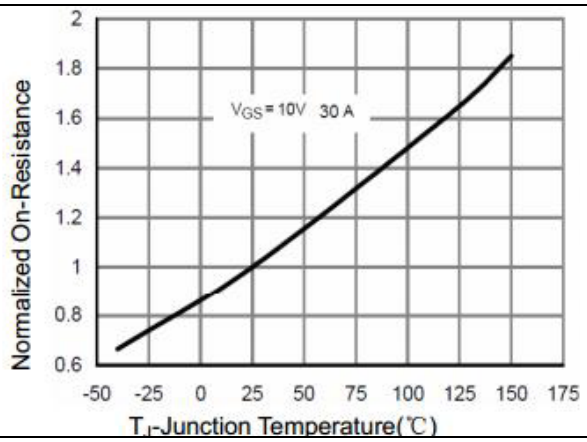


Fig.1 Output Characteristics Fig



.2 RDS(ON)-Junction Temperature

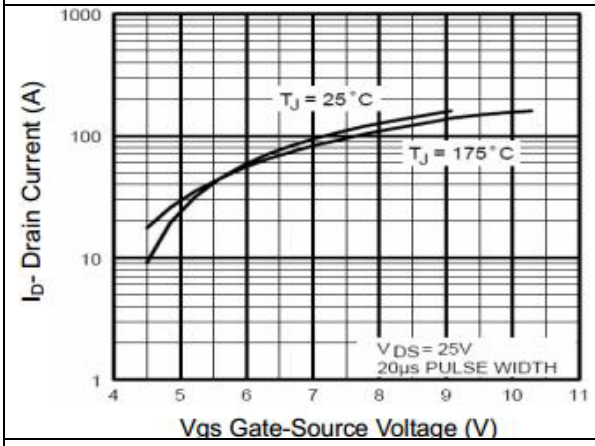


Fig.3 Transfer Characteristics

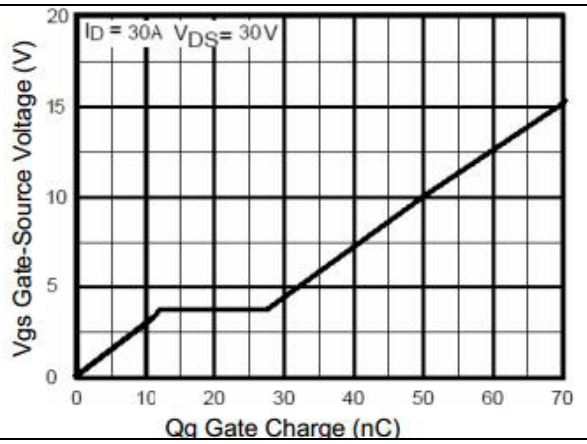


Fig.4 Gate Charge

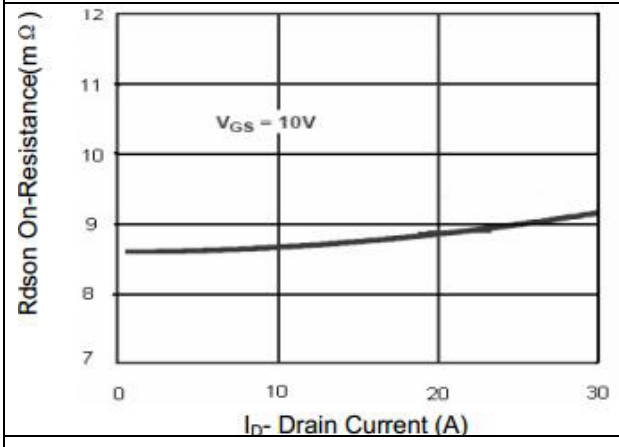


Fig.5 RDS(ON) –Drain Current

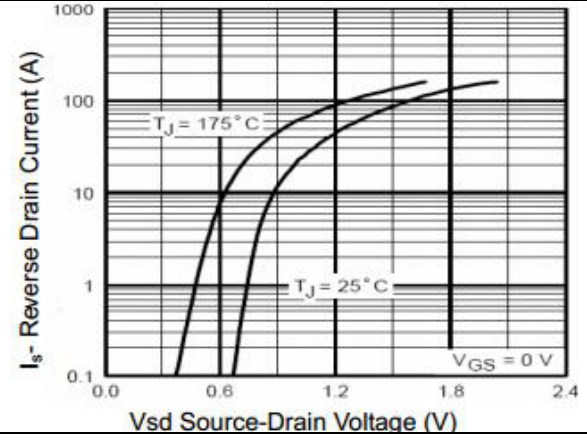


Fig.6 Sorurce-Drain Diode Forward

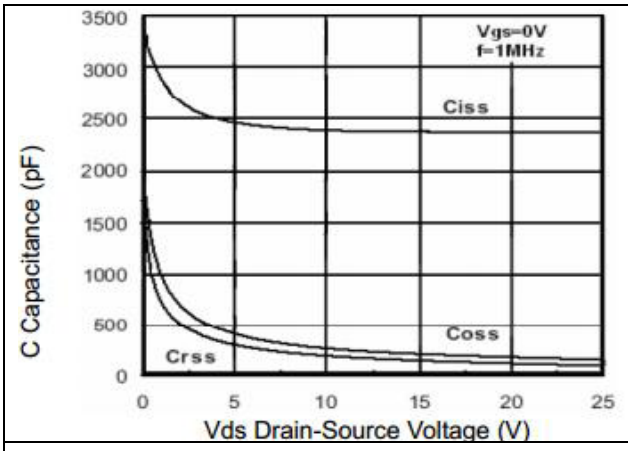


Fig.7 Capacitance - VDS

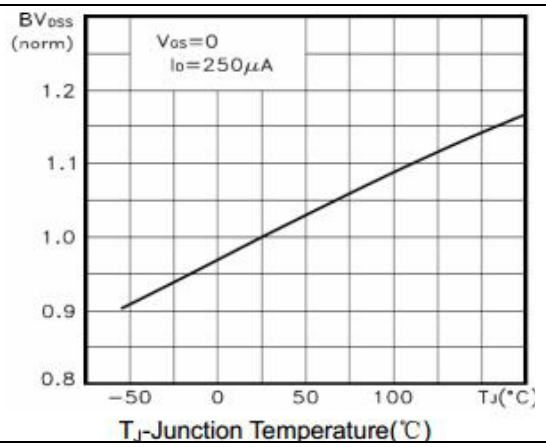


Fig.8 BVDSS –Temperature

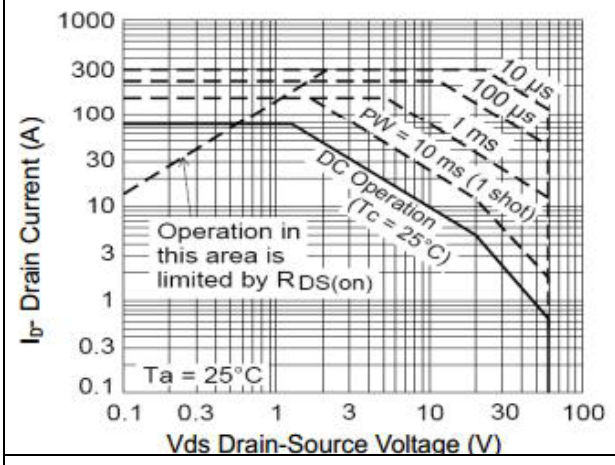


Fig.9 Safe Operation Area

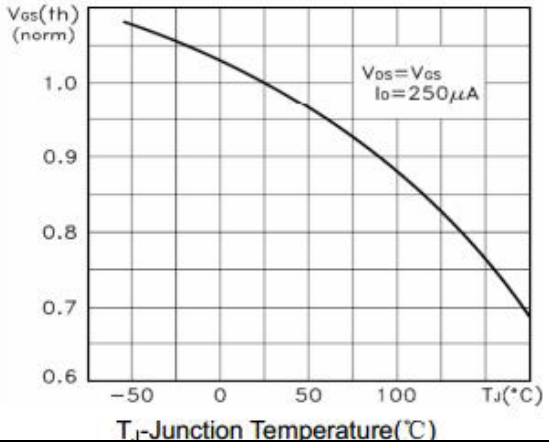


Fig.10 VGS(th) – Junction Temperature

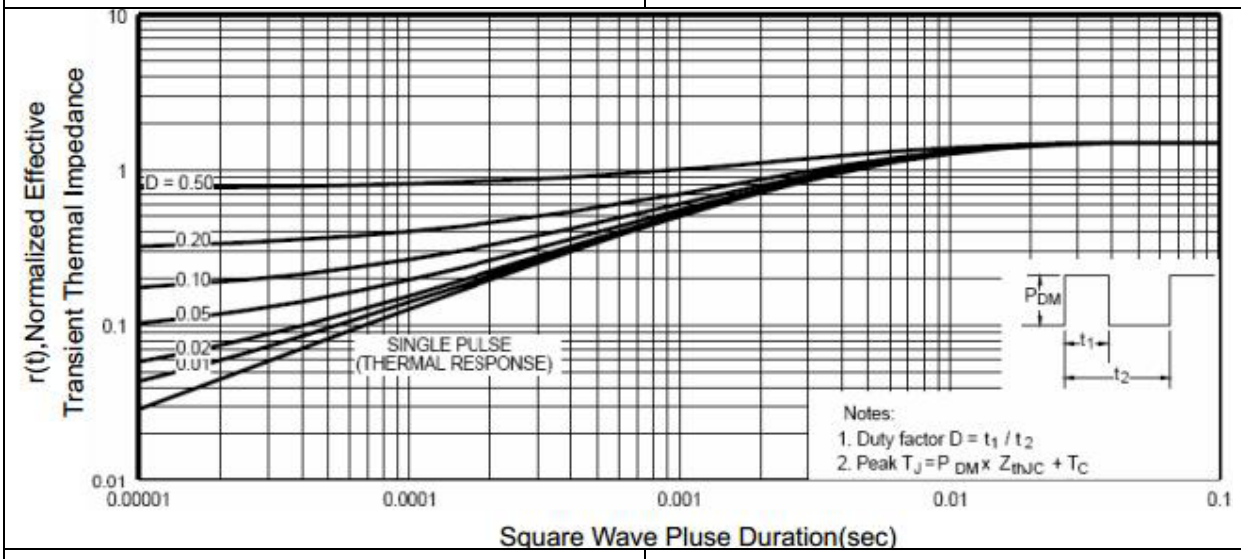
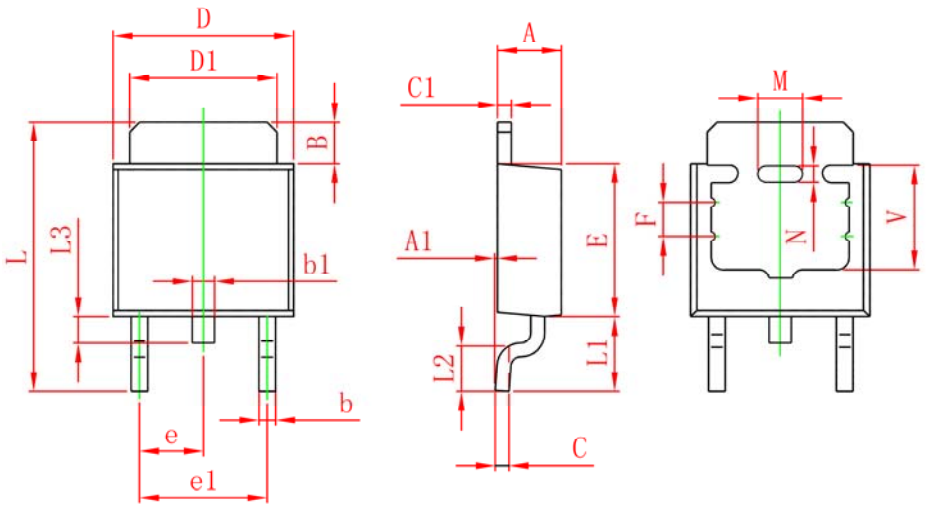


Fig.11 Normalized Maximum Transient Thermal Impedance

PACKAGE

TO-252C-2L PACKAGE OUTLINE DIMENSIONS



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	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
F	1.200REF.		0.047REF.	
M	1.600REF.		0.063REF.	
N	0.450REF.		0.018REF.	
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	3.800 REF		0.150 REF	