

# GE75NF60

**N-CHANNEL ENHANCEMENT MODE POWER MOSFET**

BVDSS	60V
RDS(ON)	12mΩ
ID	75A

## Description

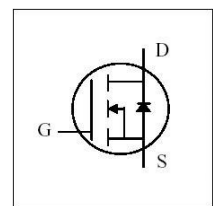
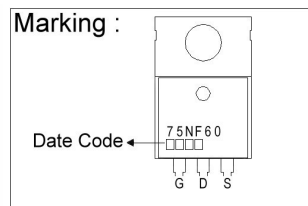
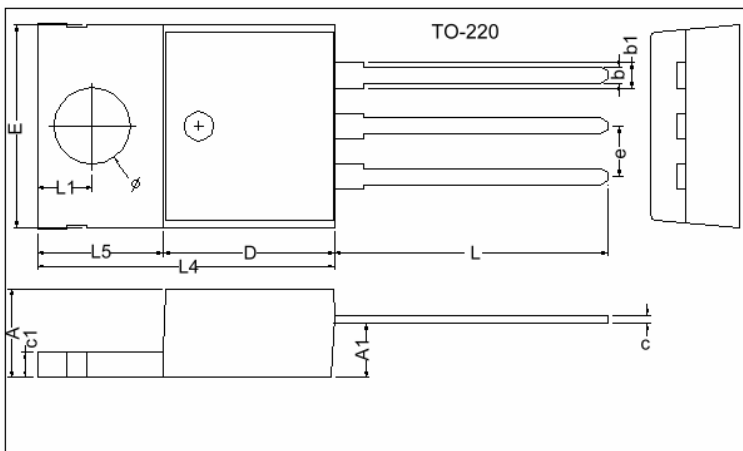
The GE75NF60 uses advanced trench technology to provide excellent on-resistance extremely efficient and cost-effectiveness device.

The through-hole version (TO-220) is available for low-profile applications and suited for low voltage applications such as DC/DC converters.

## Features

- \*High Density Cell Design for Ultra Low On-Resistance
- \*High power and Current handing capability

## Package Dimensions



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c1	1.25	1.45
b	0.76	1.00	b1	1.17	1.47
c	0.36	0.50	L	13.25	14.25
D	8.60	9.00	e	2.54 REF.	
E	9.80	10.4	L1	2.60	2.89
L4	14.7	15.3	∅	3.71	3.96
L5	6.20	6.60	A1	2.60	2.80

## Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±25	V
Continuous Drain Current	$I_D @ T_C=25^{\circ}C$	75	A
Continuous Drain Current	$I_D @ T_C=100^{\circ}C$	56	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	200	A
Total Power Dissipation	$P_D @ T_C=25^{\circ}C$	268	W
Linear Derating Factor		1.78	W/°C
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	350	mJ
Single Pulse Avalanche Current	$I_{AS}$	38	A
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 ~ +175	°C

## Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case Max.	$R_{thj-case}$	0.56	°C/W
Thermal Resistance Junction-ambient Max.	$R_{thj-amb}$	60	°C/W

**Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	60	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =250uA
Gate Threshold Voltage	V <sub>GS(th)</sub>	2.0	-	4.0	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA
Forward Transconductance	g <sub>fs</sub>	-	34	-	S	V <sub>DS</sub> =15V, I <sub>D</sub> =40A
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±25V
Drain-Source Leakage Current(T <sub>j</sub> =25°C)	I <sub>DSS</sub>	-	-	1	uA	V <sub>DS</sub> =60, V <sub>GS</sub> =0
Drain-Source Leakage Current(T <sub>j</sub> =55°C)		-	-	5	uA	V <sub>DS</sub> =48V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>3</sup>	R <sub>DS(ON)</sub>	-	-	12	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =37.5A
Total Gate Charge <sup>3</sup>	Q <sub>g</sub>	-	114	-	nC	I <sub>D</sub> =30A V <sub>DS</sub> =30V V <sub>GS</sub> =10V
Gate-Source Charge	Q <sub>gs</sub>	-	33	-		
Gate-Drain ("Miller") Change	Q <sub>gd</sub>	-	18	-		
Turn-on Delay Time <sup>3</sup>	T <sub>d(on)</sub>	-	21	-	ns	V <sub>DS</sub> =30V V <sub>GS</sub> =10V R <sub>G</sub> =3Ω R <sub>L</sub> =1Ω
Rise Time	T <sub>r</sub>	-	39	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	70	-		
Fall Time	T <sub>f</sub>	-	24	-		
Input Capacitance	C <sub>iss</sub>	-	7000	-	pF	V <sub>GS</sub> =0V V <sub>DS</sub> =30V f=1.0MHz
Output Capacitance	C <sub>oss</sub>	-	400	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	87	-		

**Source-Drain Diode**

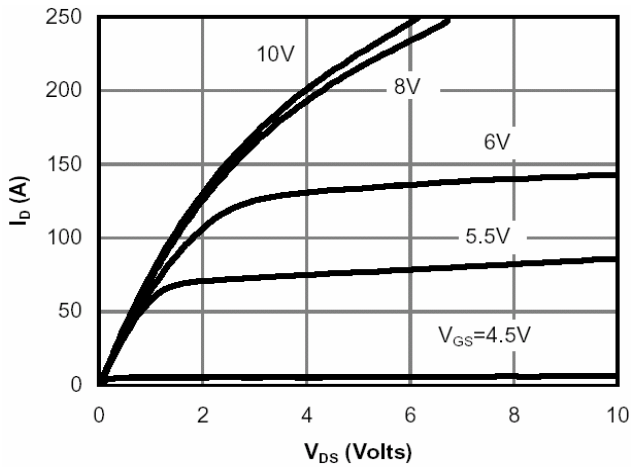
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>3</sup>	V <sub>SD</sub>	-	-	1.5	V	I <sub>S</sub> =75A, V <sub>GS</sub> =0V, T <sub>j</sub> =25°C
Reverse Recovery Time <sup>3</sup>	T <sub>rr</sub>	-	53	-	ns	I <sub>S</sub> =30A, V <sub>GS</sub> =0V di/dt=100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	-	143	-	nC	
Continuous Source Current (Body Diode)	I <sub>S</sub>	-	-	75	A	V <sub>D</sub> = V <sub>G</sub> =0V, V <sub>S</sub> =1.5V

Notes: 1. Pulse width limited by safe operating area.

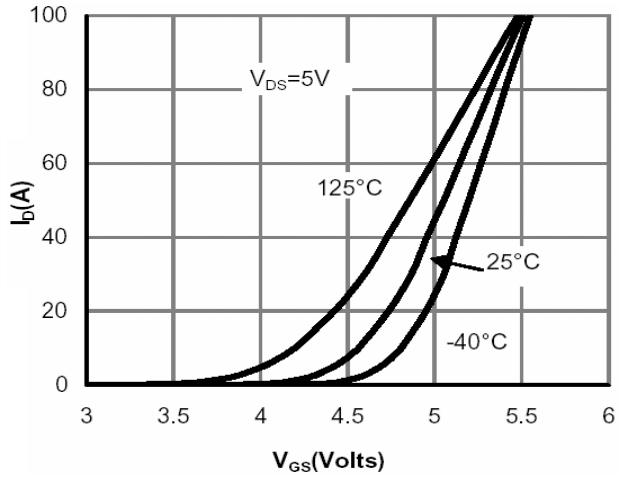
2. Starting T<sub>j</sub>=25°C, V<sub>DD</sub>=20V, L=0.1mH, R<sub>G</sub>=25Ω, I<sub>AS</sub>=20A.

3. Pulse width ≤ 300us, duty cycle ≤ 2%.

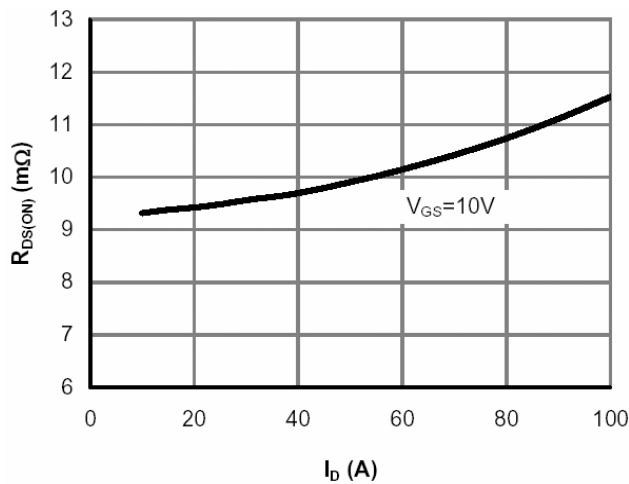
**Characteristics Curve**



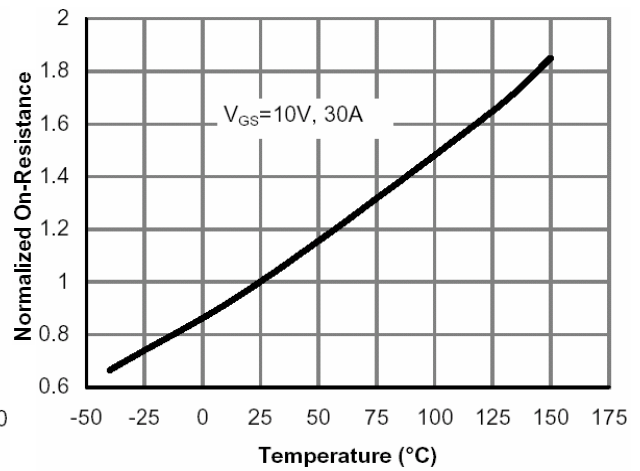
**Fig 1. Typical Output Characteristics**



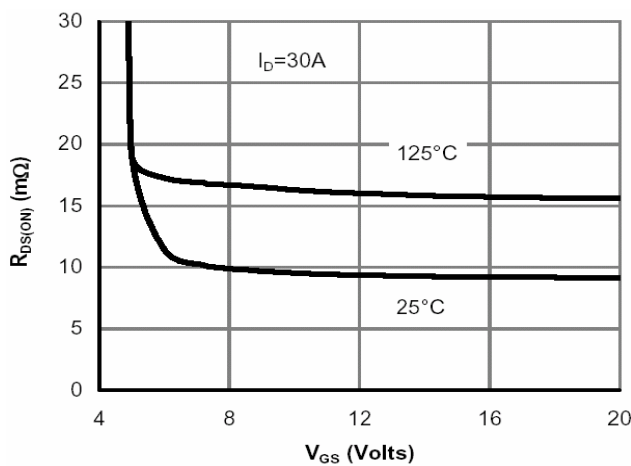
**Fig 2. Transfer Characteristics**



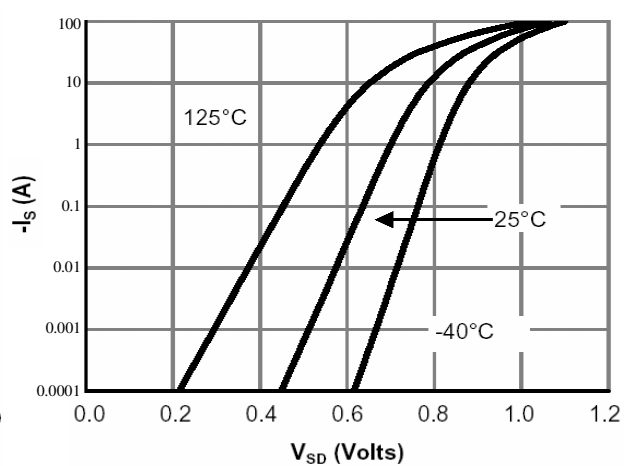
**Fig 3. On-Resistance v.s. Drain Current and Gate Voltage**



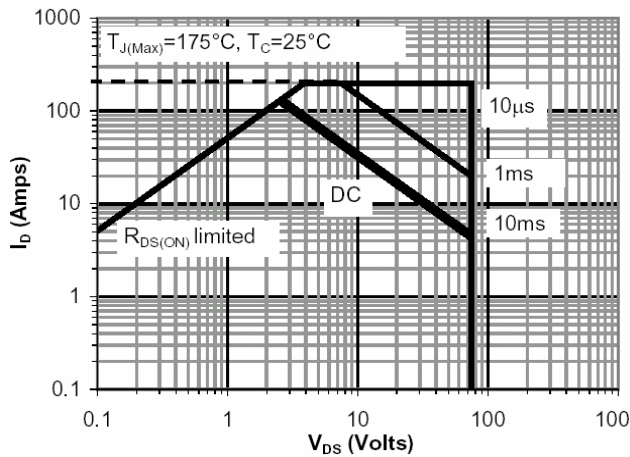
**Fig 4. On-Resistance v.s. Junction Temperature**



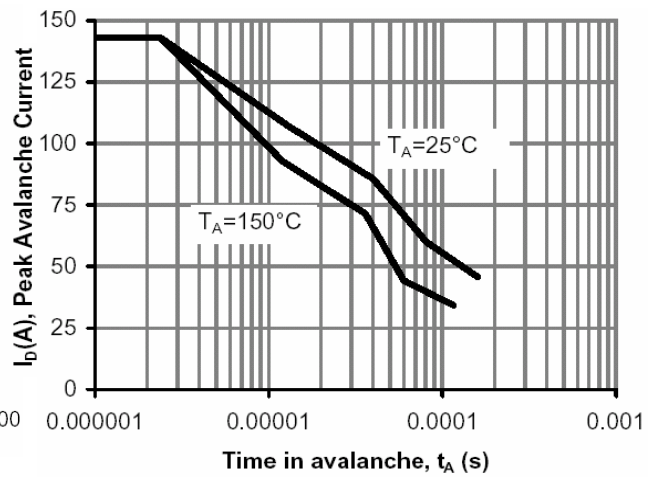
**Fig 5. On-Resistance v.s. Gate-Source Voltage**



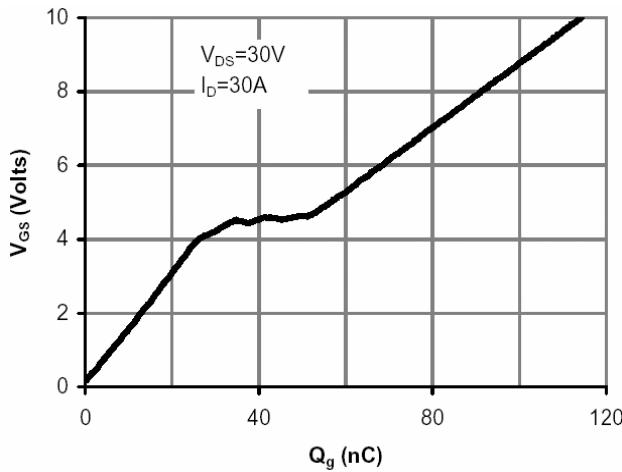
**Fig 6. Body Diode Characteristics**



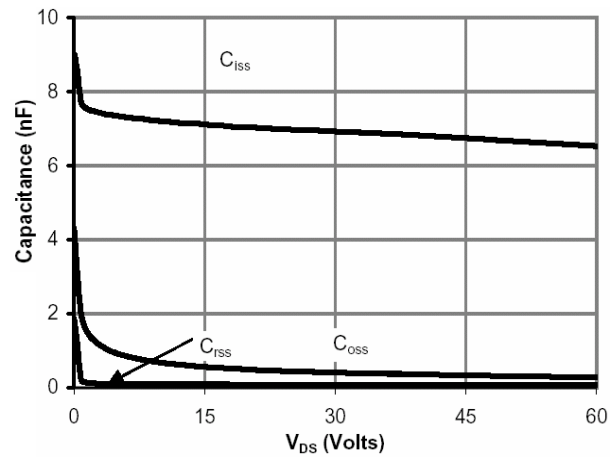
**Fig 7. Maximum Safe Operating Area**



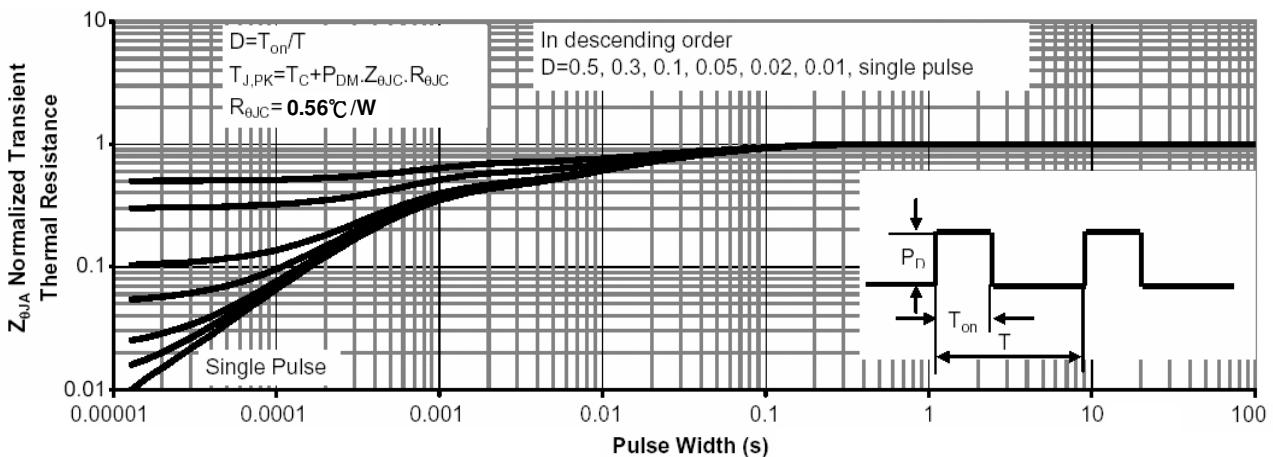
**Fig 8. Single Pulse Avalanche Capability**



**Fig 9. Gate Charge Characteristics**



**Fig 10. Typical Capacitance Characteristics**



**Fig 11. Normalized Maximum Transient Thermal Impedance**

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**Head Office And Factory:**

- Taiwan:** No. 17-1 Tatung Rd. Fu Kou Hsin-Chu Industrial Park, Hsin-Chu, Taiwan, R. O. C.
- TEL : 886-3-597-7061 FAX : 886-3-597-9220, 597-0785
- China:** (201203) No.255, Jang-Jiang Tsai-Lueng RD. , Pu-Dung-Hsin District, Shang-Hai City, China
- TEL : 86-21-5895-7671 ~ 4 FAX : 86-21-38950165