



# BETTER POWER

# BP75N75

## N-Channel Enhancement Mode Field Effect Transistor

BVDSS	75V
RDS(ON)	9mΩ
ID	75A

### Description

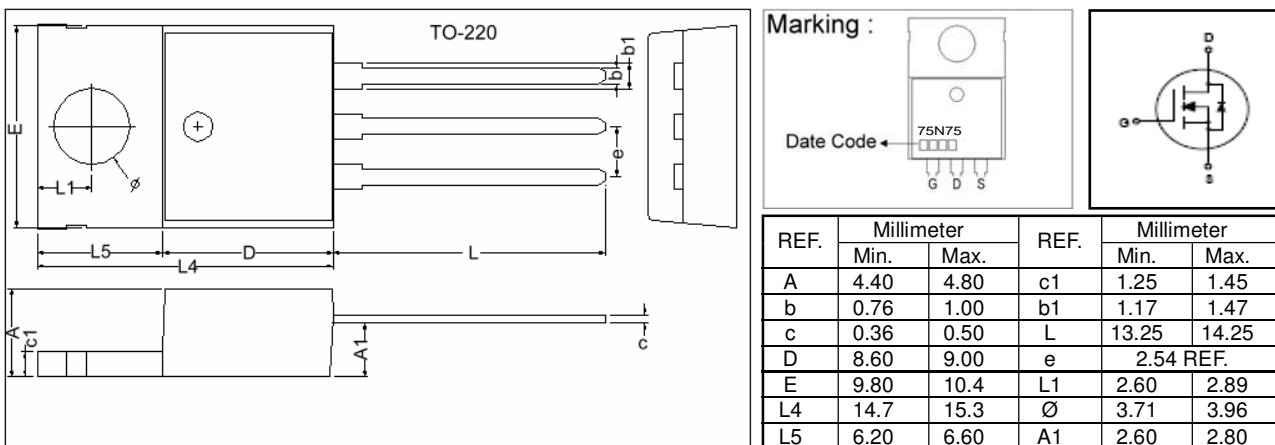
The BP75N75 uses advanced trench technology to provide excellent on-resistance extremely efficient and cost-effectiveness device.

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

### Features

- \* Super high dense cell design for low RDS(ON)
- \* Rugged and reliable
- \* Simple drive requirement

### Package Dimensions



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	75	V
Gate-Source Voltage	V <sub>G</sub>	±20	V
Drain Current-Continuous <sup>a</sup> @T <sub>j</sub> =125°C - Pulse d <sup>b</sup>	I <sub>D</sub>	75	A
	I <sub>DM</sub>	300	A
Drain-source Diode Forward Current <sup>a</sup>	I <sub>S</sub>	60	A
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	220	W
Operating Junction and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to 175	°C

### THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to Ambient <sup>a</sup>	R <sub>th JA</sub>	50	°C/W
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**ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)**

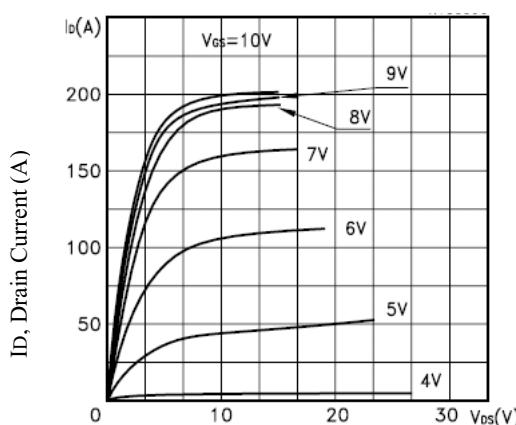
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BVDSS	VGS=0V, ID=-250μA	75			V
Zero Gate Voltage Drain Current	IDSS	VDS=20V, VGS=0V			20	μA
Gate-Body Leakage	IGSS	VGS=±16V, VDS=0V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	VGS(th)	VDS=VGS, ID=-250μA	2		4	V
Drain-Source On-State Resistance	RDS(ON)	VGS=10V, ID=48A		9	11	m Ω
Forward Transconductance	gFS	VGS=25V, ID=30A		50		S
<b>DAYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>ISS</sub>	VDS=25V, VGS=0V f=1.0MHz		3300		pF
Output Capacitance	C <sub>OSS</sub>			530		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			80		pF
<b>SWITCHING CHARACTERISISTICS</b>						
Turn-On Delay Time	t <sub>D(ON)</sub>	VDD=38V ID=48A, VGEN=10V RL=10ohm RGEN=4.7ohm		12		ns
Rise Time	tr			79		ns
Turn-Off Delay Time	t <sub>D(OFF)</sub>			80		ns
Fall Time	tf			52		ns
Total Gate Charge	Q <sub>G</sub>	VDS=60V, ID=48A VGS=10V RGEN=4.7ohm		90	140	nC
Gate-Source Charge	Q <sub>GS</sub>			20	35	nC
Gate-Drain Charge	Q <sub>GD</sub>			30	45	nC

## ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

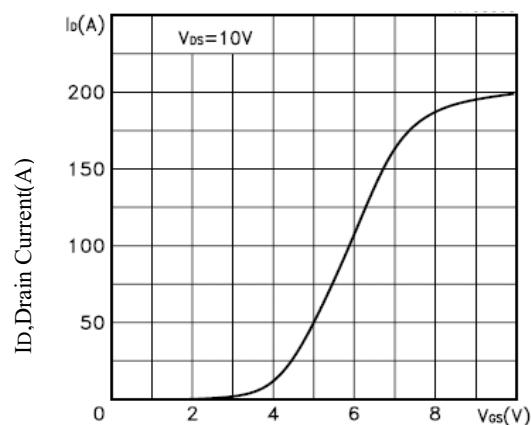
Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =60A		1.5		V

## Notes

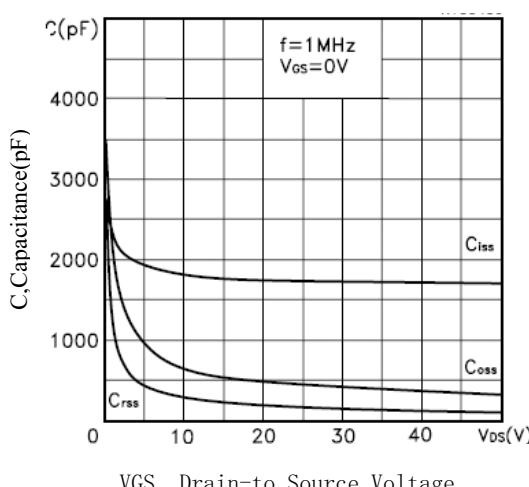
- a. Surface Mounted on FR4 Board, t ≤ 10sec
- b. Pulse Test: Pulse Width ≤ 300Us, Duty Cycle ≤ 2%
- c. Guaranteed by design, not subject to production testing.



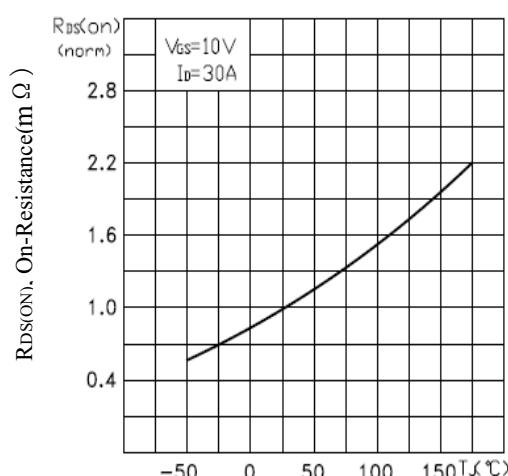
V<sub>DS</sub>, Drain-to-Source Voltage (V)  
Figure 1. Output Characteristics



V<sub>GS</sub>, Gate-to-source Voltage (V)  
Figure 2. Transfer Characteristics



V<sub>GS</sub>, Drain-to Source Voltage



R<sub>DS(on)</sub> (norm)  
V<sub>GS</sub>=10V  
I<sub>D</sub>=30A  
mΩ  
-50 0 50 100 150 T(°C)  
Figure4. On-Resistance Variation with Temperature

Figure3. Capacitance

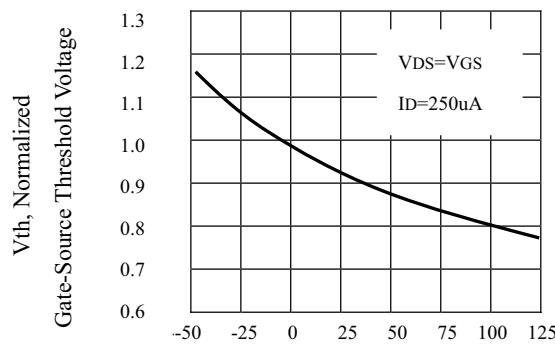


Figure5.Gate Threshold Variation  
With Temperature

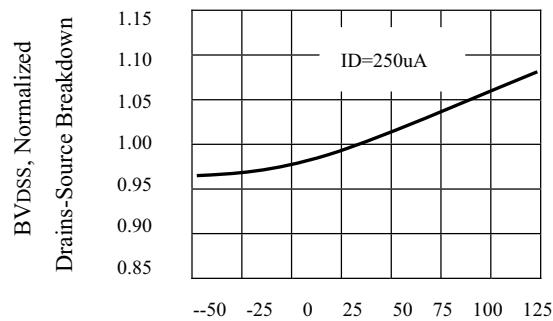


Figure6.Breakdown Voltage Variation  
With Temperature

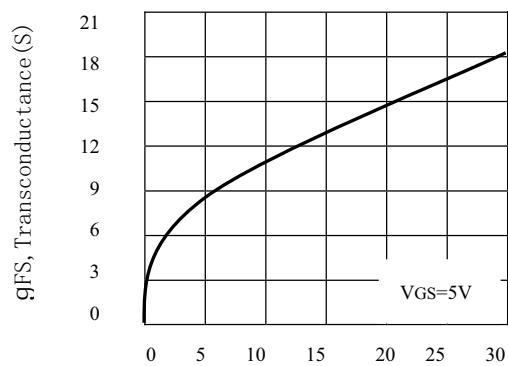


Figure7.Transconductance Variation  
With Drain Current

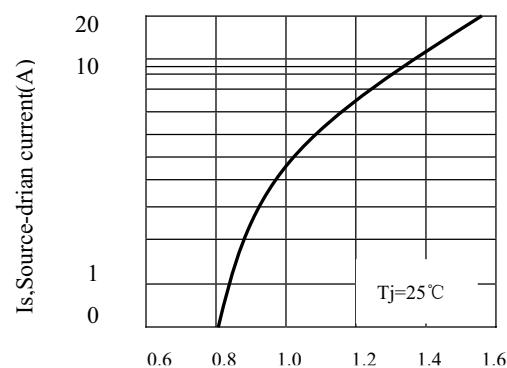


Figure8.Body Diode Forward Voltage  
Variation with Source Current

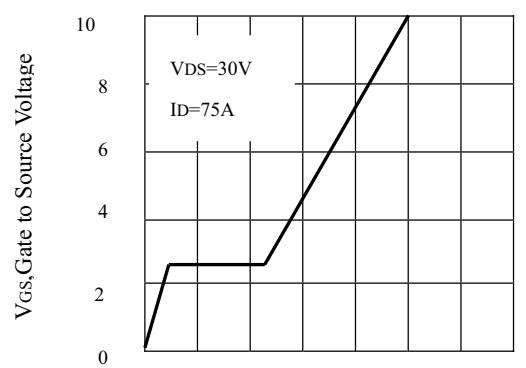


Figure9. Gate Charge

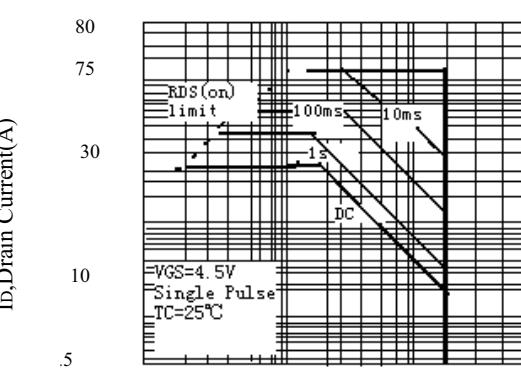


Figure10.Maximum Safe Operating Area