

N-Channel Enhancement Mode Power MOSFET**MTN75N75HE3**

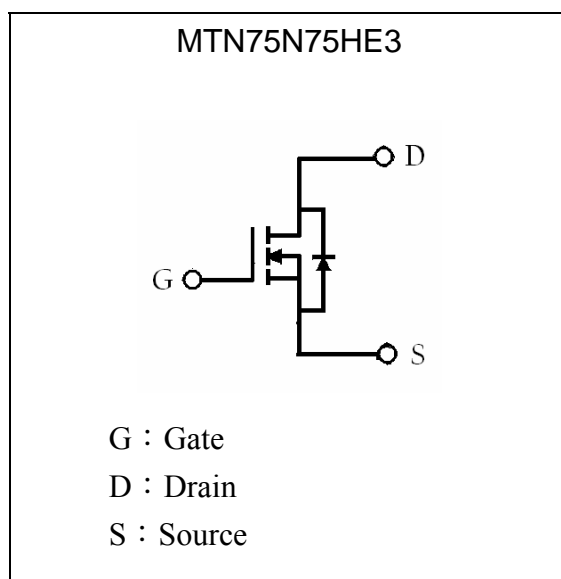
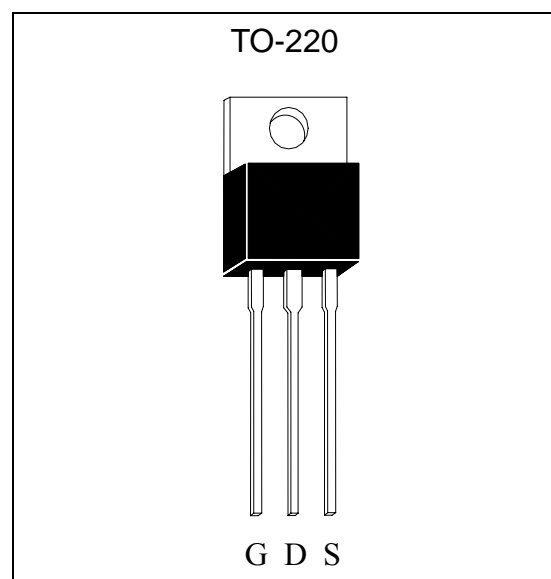
BV_{DSS}	75V
R_{DSON}	11 m Ω
I_D	80A

Description

The MTN75N75HE3 is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-220 package is universally preferred for all commercial-industrial applications

Features

- High Density Cell Design for Ultra Low On-Resistance
- Simple Drive Requirement
- High Power and Current Handling Capability
- Fast Switching Characteristic
- RoHS compliant package

Symbol**Outline**

**Absolute Maximum Ratings** ($T_C=25^{\circ}\text{C}$)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	75	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	80	A
Continuous Drain Current @ $T_C=100^{\circ}\text{C}$	I_D	56	A
Pulsed Drain Current @ $V_{GS}=10\text{V}$ (Note 1)	I_{DM}	300	A
Single Pulse Avalanche Current	I_{AS}	57	A
Single Pulse Avalanche Energy @ $L=0.5\text{mH}$, $I_{AS}=57\text{A}$, $R_G=25\Omega$, $V_{DD}=25\text{V}$	E_{AS}	800	mJ
Total Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_d	137	W
Linear Derating Factor		1.09	W/ $^{\circ}\text{C}$
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55~+150	$^{\circ}\text{C}$

Note : *1.Pulse width limited by safe operating area

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	0.91	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	62.5	$^{\circ}\text{C}/\text{W}$



Characteristics (T_j=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	75	-	-	V	V _{GS} =0, I _D =250μA
V _{GS(th)}	2.0	2.7	4.0	V	V _{DS} = V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±20
I _{DSS}	-	-	1	μA	V _{DS} =75V, V _{GS} =0
I _{DSS}	-	-	5	μA	V _{DS} =60V, V _{GS} =0, T _j =55°C
I _{DON}	80	-	-	A	V _{DS} =10V, V _{GS} =10V (Note 1)
R _{DS(ON)}	-	9.5	11	mΩ	V _{GS} =10V, I _D =40A (Note 1)
G _{FS}	-	72	-	S	V _{DS} =15V, I _D =40A (Note 1)
Dynamic					
Q _g	-	117	-	nC	V _{DS} =80V, I _D =60A, V _{GS} =10V (Note 1 & 2)
Q _{gs}	-	27	-		
Q _{gd}	-	47	-		
t _{d(ON)}	-	25	-	ns	V _{DS} =37.5V, I _D =45A, V _{GS} =10V, R _{GS} =4.7Ω (Note 1 & 2)
t _r	-	100	-		
t _{d(OFF)}	-	66	-		
t _f	-	30	-		
C _{iss}	-	3457	-	pF	V _{GS} =0V, V _{DS} =25V, f=1MHz
C _{oss}	-	771	-		
C _{rss}	-	170	-		
Source-Drain Diode					
I _s	-	-	80	A	V _D =V _G =0V, V _S =1.5V (Note 3)
V _{SD}	-	-	1.5	V	I _S =75A, V _{GS} =0V (Note 1)
t _{rr}	-	53	-	ns	V _{GS} =0, I _S =30A, dI _F /dt=100A/μs
Q _{rr}	-	143	-	nC	

Note : 1. Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
 2. Independent of operating temperature
 3. Pulse width limited by maximum junction temperature.

Ordering Information

Device	Package	Shipping	Marking
MTN75N75HE3	TO-220 (RoHS compliant)	50 pcs/tube, 20 tubes/box, 4 boxes / carton	75N75H

Characteristic Curves

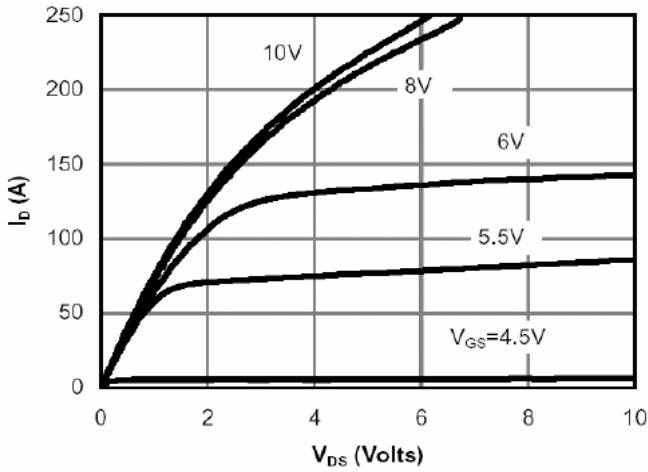


Fig 1. Typical Output Characteristics

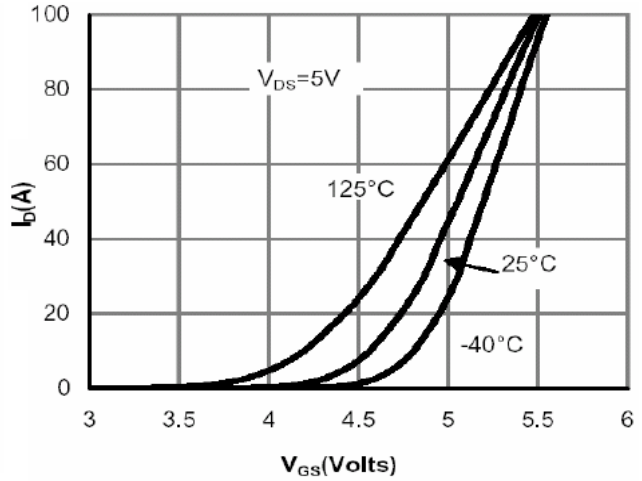


Fig 2. Transfer Characteristics

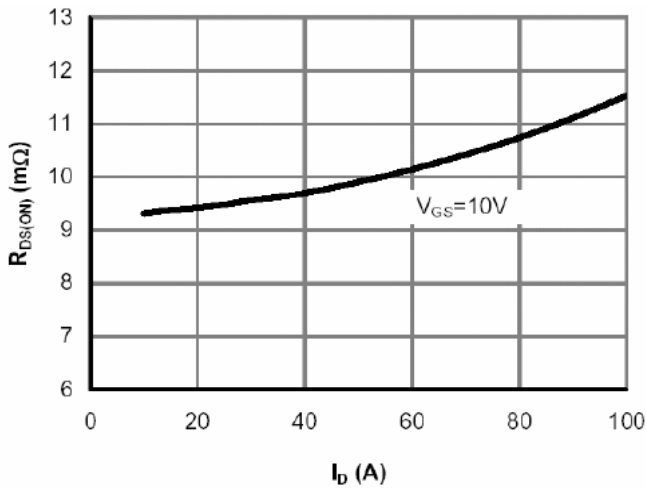


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

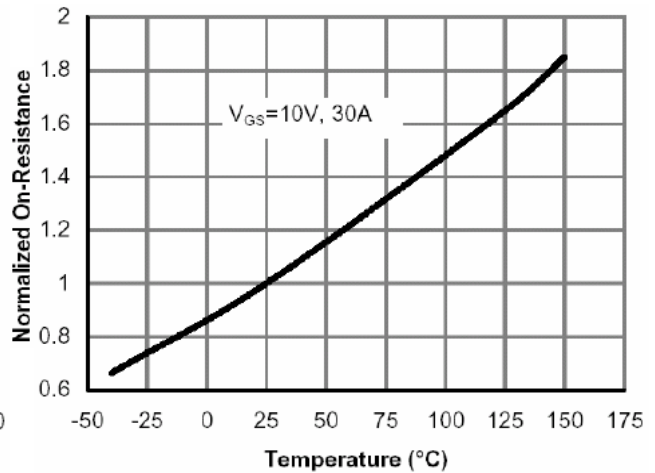


Fig 4. On-Resistance vs. Junction Temperature

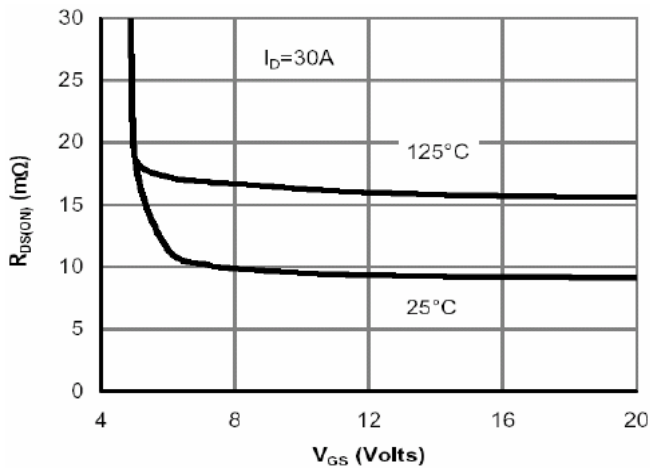


Fig 5. On-Resistance vs. Gate-Source Voltage

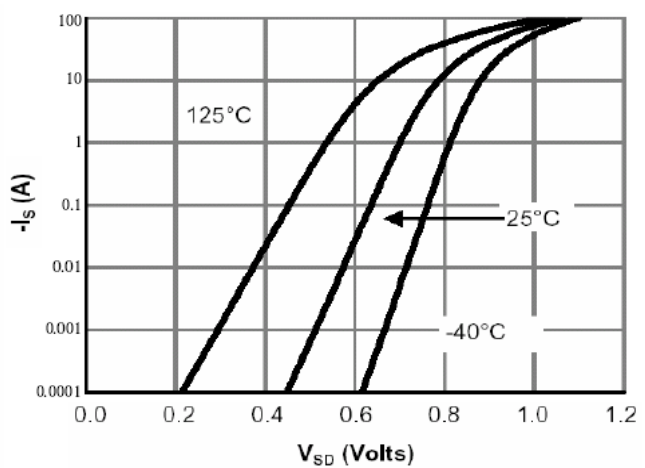


Fig 6. Body Diode Characteristics

Characteristic Curves(Cont.)

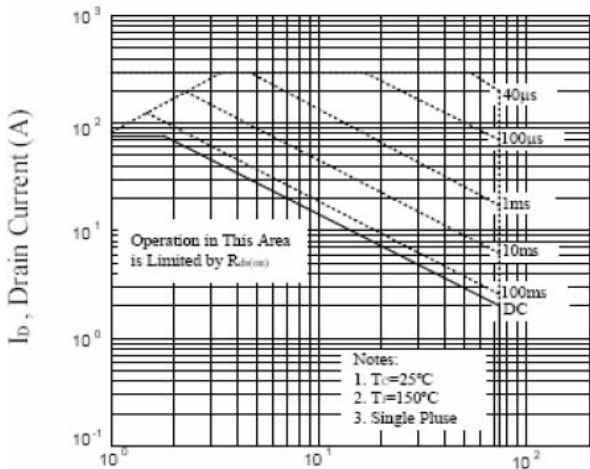


Fig 7. Maximum Safe Operating Area

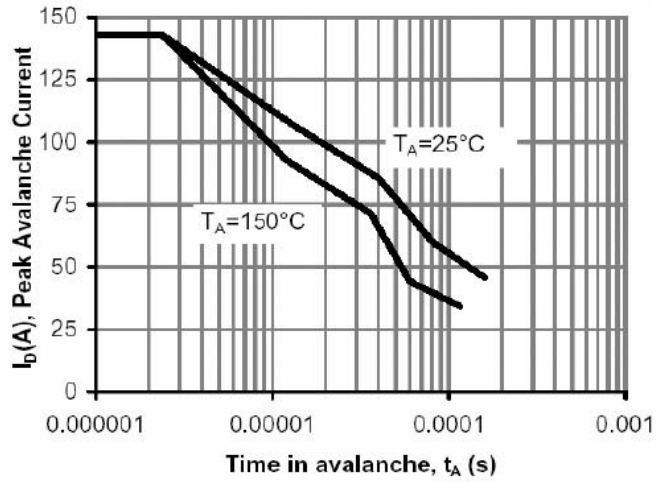


Fig 8. Single Pulse Avalanche Capability

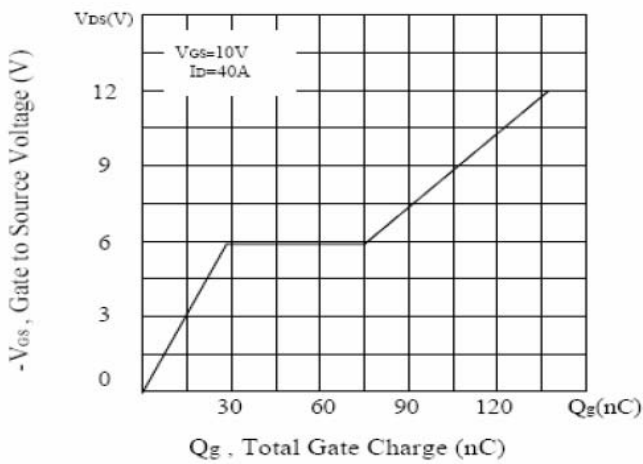


Fig 9. Gate Charge Characteristics

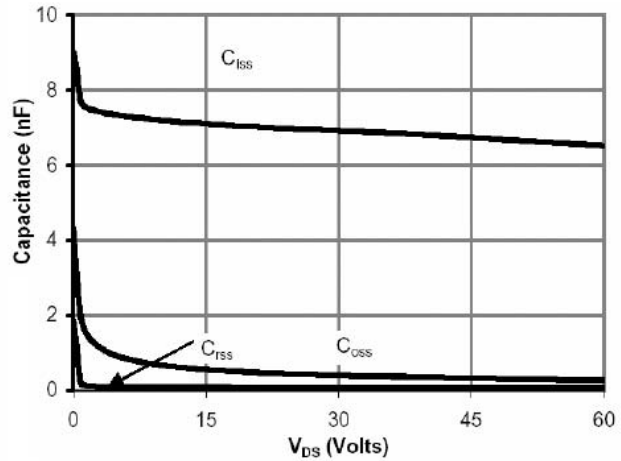


Fig 10. Typical Capacitance Characteristics

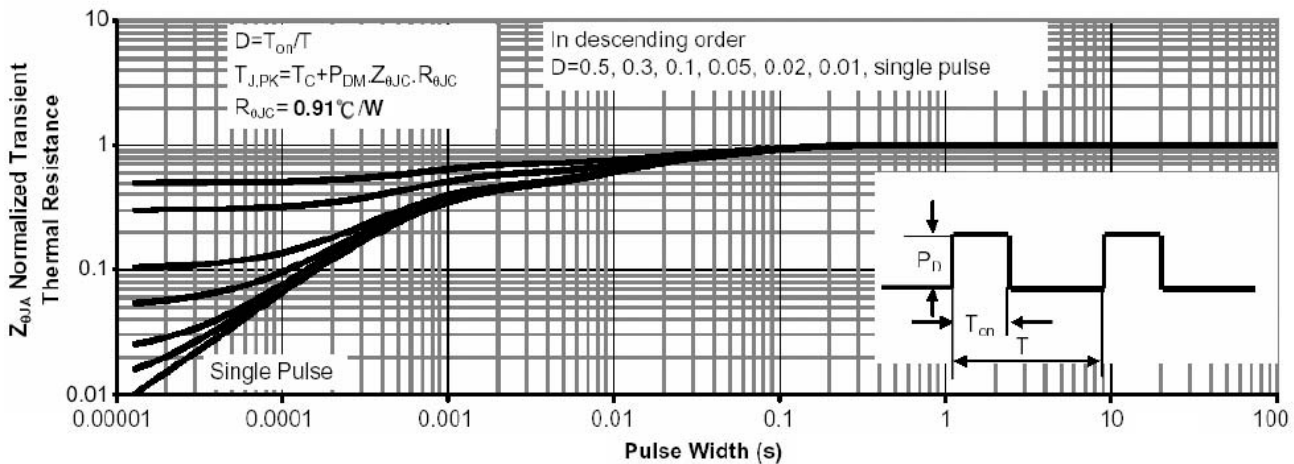
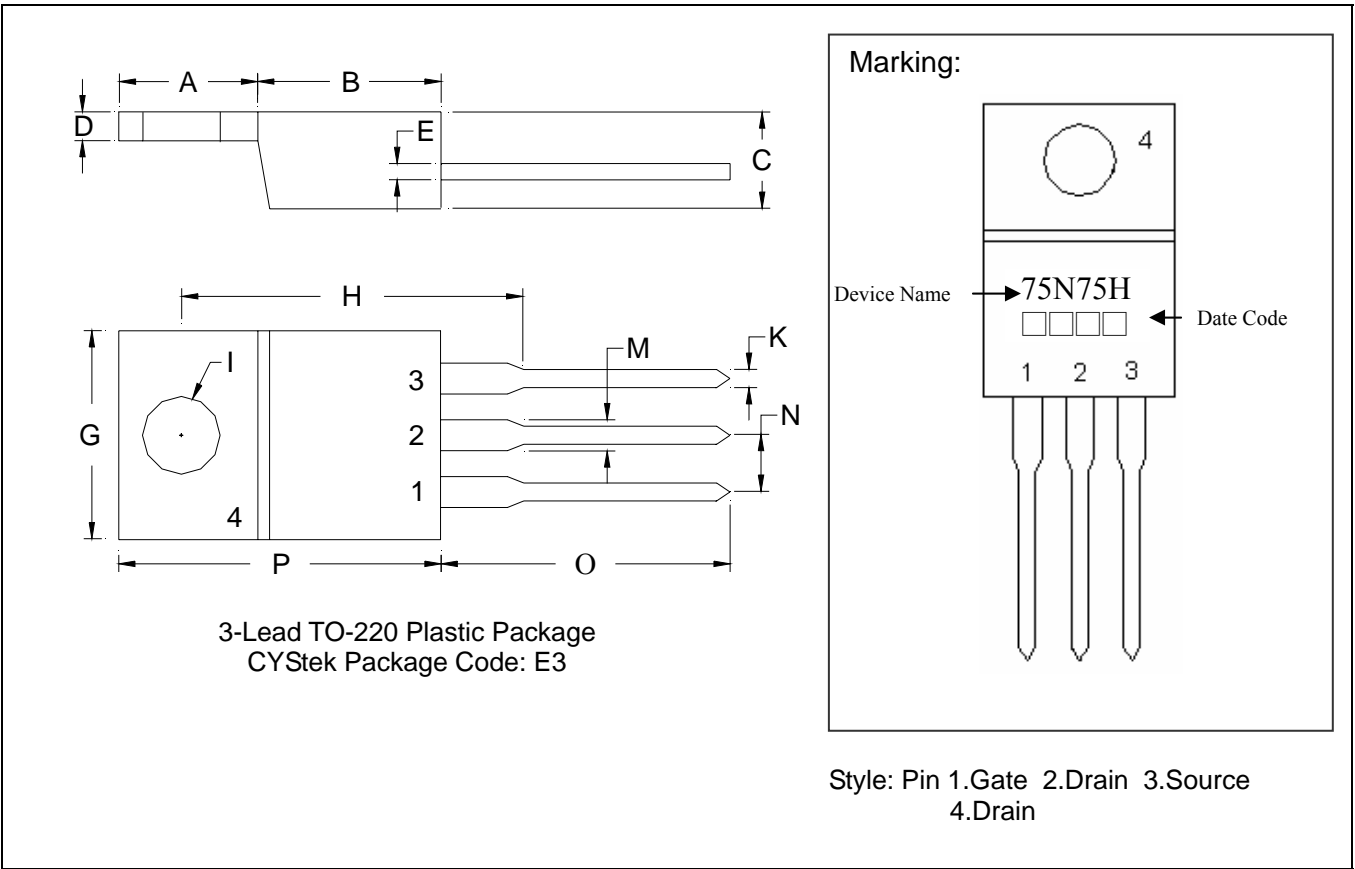


Fig 11. Normalized Maximum Transient Thermal Impedance

TO-220 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.2441	0.2598	6.20	6.60	I	-	*0.1508	-	*3.83
B	0.3386	0.3543	8.60	9.00	K	0.0299	0.0394	0.76	1.00
C	0.1732	0.1890	4.40	4.80	M	0.0461	0.0579	1.17	1.47
D	0.0492	0.0571	1.25	1.45	N	-	*0.1000	-	*2.54
E	0.0142	0.0197	0.36	0.50	O	0.5217	0.5610	13.25	14.25
G	0.3858	0.4094	9.80	10.40	P	0.5787	0.6024	14.70	15.30
H	-	*0.6398	-	*16.25					

Notes: 1.Controlling dimension: millimeters.
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: KFC ; pure tin plated
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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