



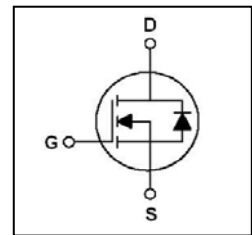
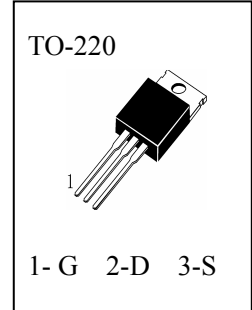
## N-Channel Enhancement Mode Field Effect Transistor

### ■ Applications

- Servo motor control.
- Power MOSFET gate drivers.
- DC/DC converters
- Other switching applications.

### ■ Features

- 75A, 80V(See Note),  $R_{DS(on)} < 13mV\Omega @ V_{GS} = 10V$
- Fast switching
- 100% avalanche tested
- Minimize input capacitance and gate charge
- Equivalent Type:ME75N80C



### ■ Maximum Ratings (Ta=25°C unless otherwise specified)

$T_{stg}$	Storage Temperature	-----	-55~150°C
$T_j$	Operating Junction Temperature	-----	150°C
$V_{DSS}$	Drain-Source Voltage	-----	80V
$V_{GSS}$	Gate-Source Voltage	-----	±20V
$I_D$	Drain Current (Continuous)( $T_c=25^\circ C$ )	-----	75A
$I_{DM}$	Pulsed Drain Current (Note 1)	-----	300A
$P_D$	Maximum Power Dissipation ( $T_c=25^\circ C$ )	-----	75W
	( $T_A=25^\circ C$ )	-----	4W
$E_{AS}$	Pulsed Avalanche Energy (Note 2)	-----	400mJ

### ■ Thermal Characteristics

Symbol	Items	TO-220	Unit
Rthj-case	Thermal Resistance Junction-case	Max 2.0	°C/W
Rthj-amb	Thermal Resistance Junction-ambient	Max 62.5	°C/W

**Electrical Characteristics** (Ta=25°C unless otherwise specified)

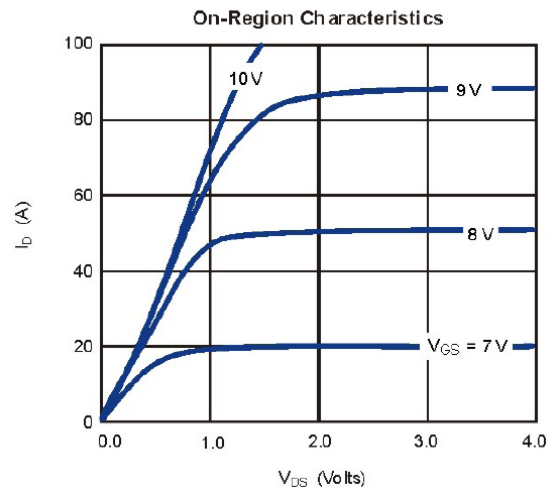
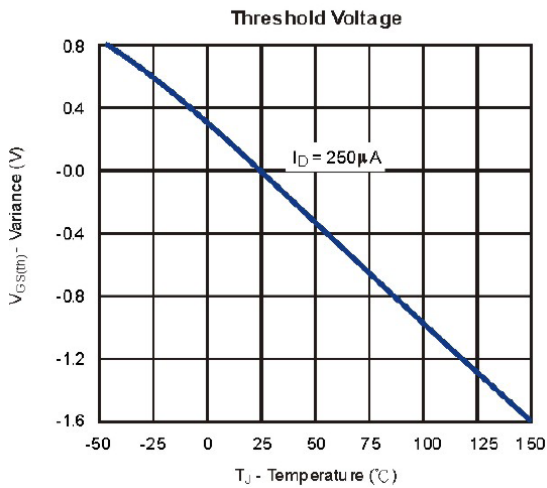
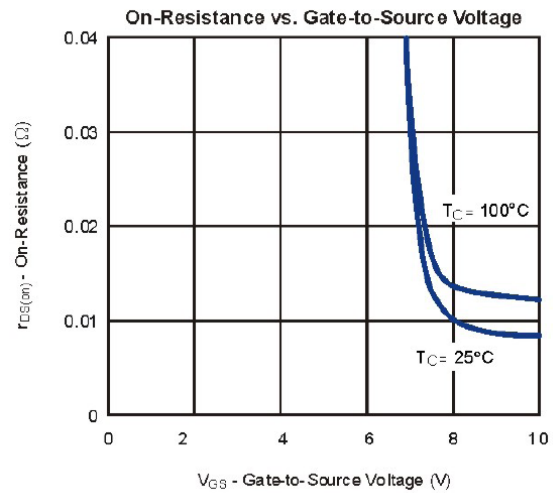
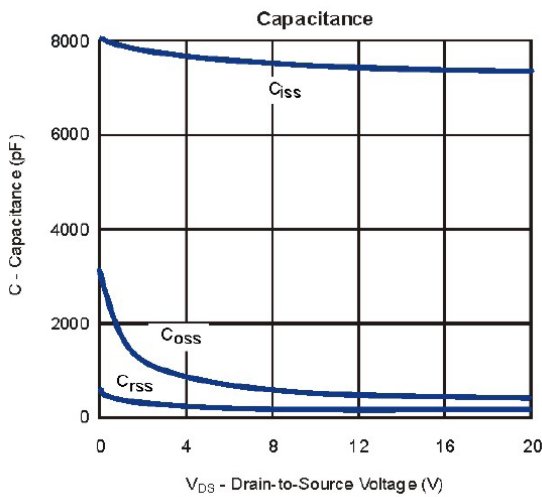
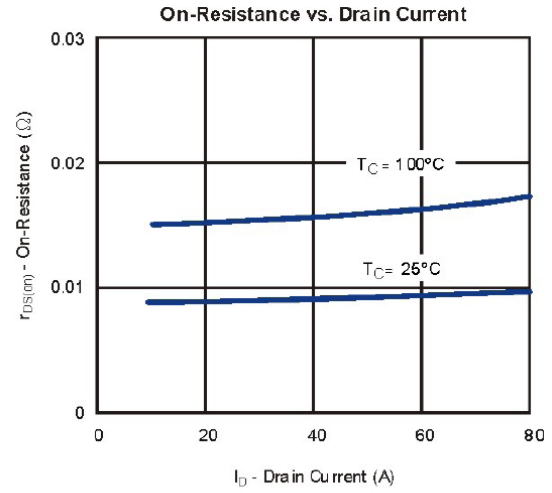
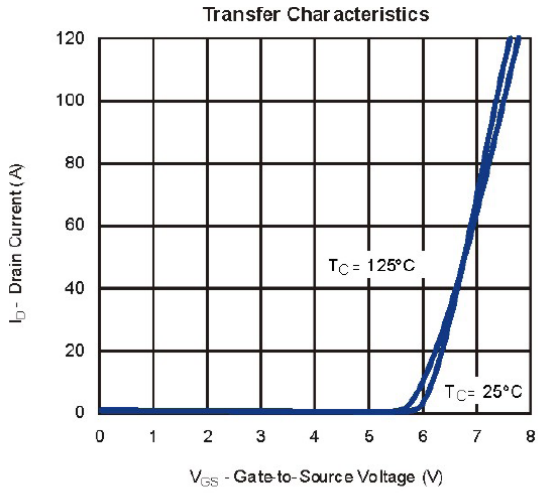
Symbol	Items	Min.	Typ.	Max.	Unit	Conditions
<b>Off Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	80			V	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current			1	μA	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V
I <sub>GSS</sub>	Gate – Body Leakage			±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	4.0		6.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA
R <sub>DS(on)</sub>	Static Drain-Source On-Resistance			13	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =40A (Note 3)
<b>Dynamic Characteristics and Switching Characteristics</b>						
C <sub>iss</sub>	Input Capacitance		7400		pF	V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0V, f = 1.0 MHz
C <sub>oss</sub>	Output Capacitance		450		pF	
C <sub>rss</sub>	Reverse Transfer Capacitance		140		pF	
t <sub>d(on)</sub>	Turn - On Delay Time		80		nS	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 10 V, R <sub>L</sub> =15 Ω ,R <sub>G</sub> = 10 Ω (Note 3)
t <sub>r</sub>	Rise Time		37		nS	
t <sub>d(off)</sub>	Turn - Off Delay Time		140		nS	
t <sub>f</sub>	Fall Time		27		nS	
Q <sub>g</sub>	Total Gate Charge		120		nC	V <sub>DS</sub> =60V, I <sub>D</sub> =75A, V <sub>GS</sub> = 10V (Note 3)
Q <sub>gs</sub>	Gate–Source Charge		54		nC	
Q <sub>gd</sub>	Gate–Drain Charge		38		nC	
R <sub>g</sub>	Gate Resistance		2.3		Ω	f=1MHz
<b>Drain-Source Diode Characteristics and Maximun Ratings</b>						
I <sub>S</sub>	Continuous Source–Drain Diode Forward Current			75	A	
I <sub>SM</sub>	Pulsed Drain-Source Diode Forward Current			300	A	
V <sub>SD</sub>	Source–Drain Diode Forward On–Voltage			1.5	V	I <sub>S</sub> =25A, V <sub>GS</sub> =0(Note 3)

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I<sub>D</sub>=30A, V<sub>DD</sub>=37.5V, Starting T<sub>J</sub>=25°C
3. Pulse Test: Pulse width≤300μS, Duty Cycle≤2%

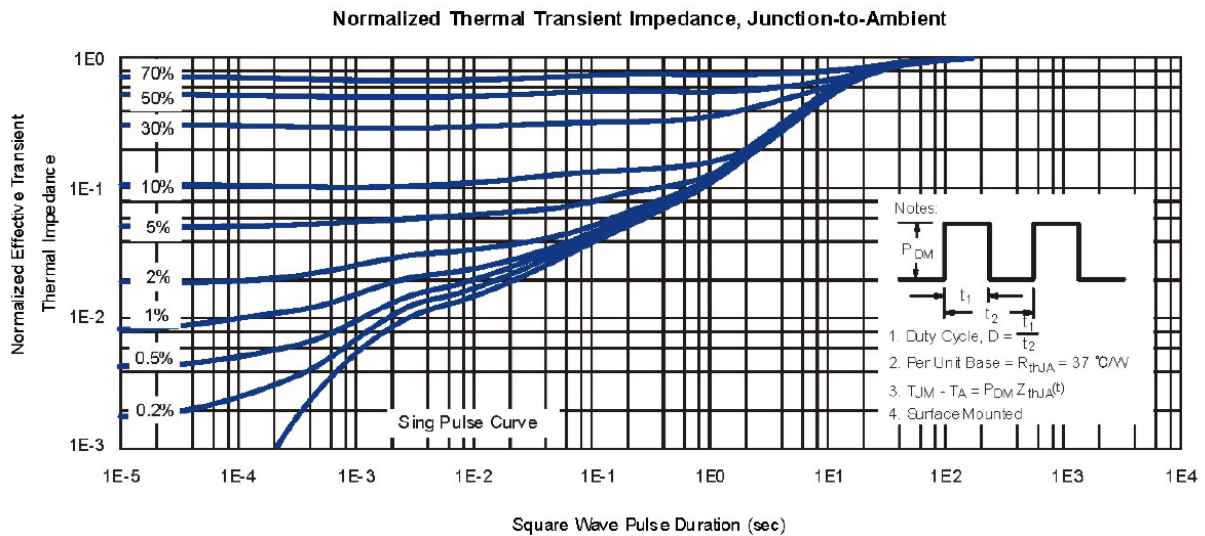
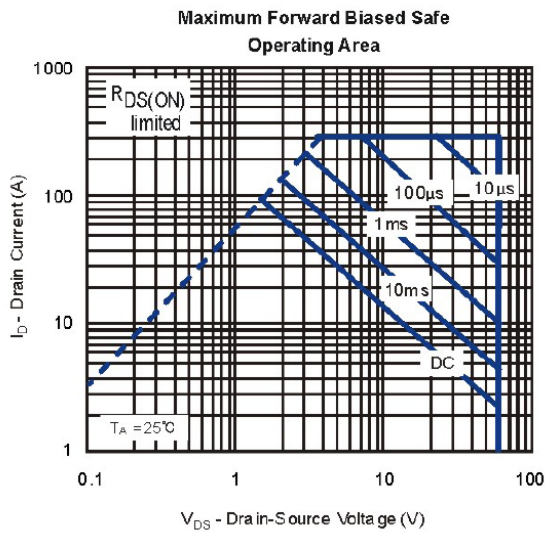
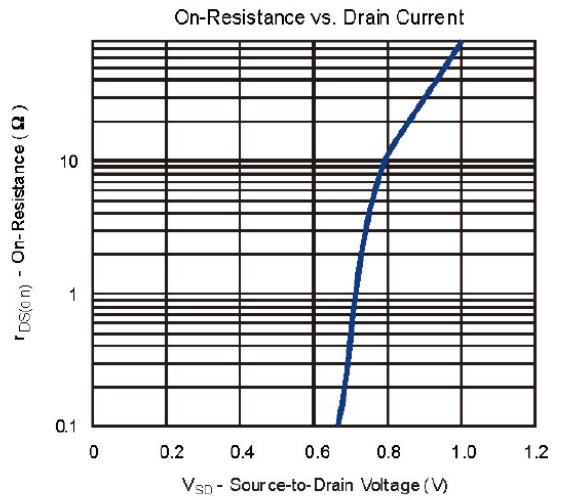
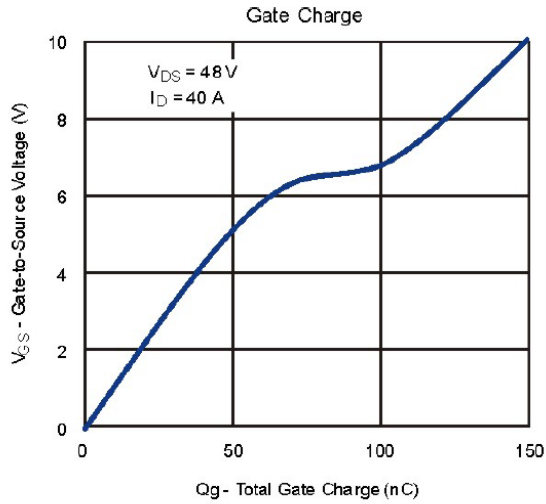


## Typical Characteristics





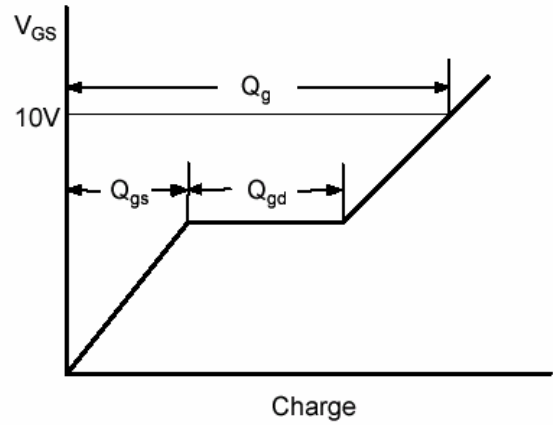
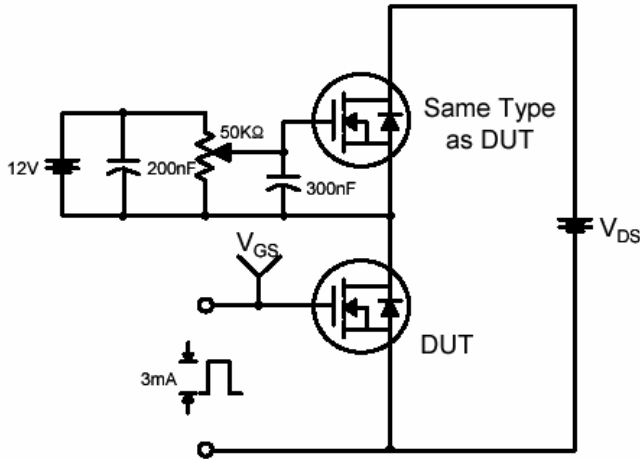
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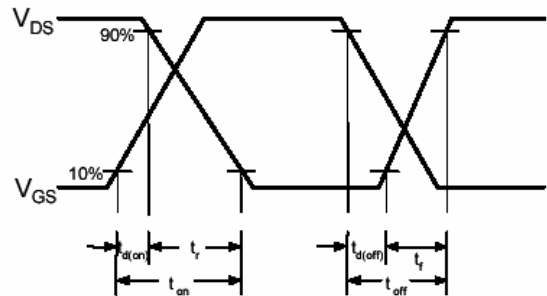
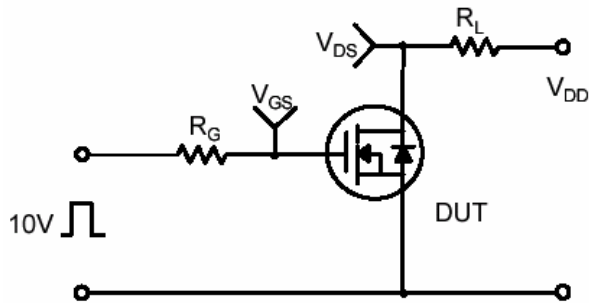


## Typical Characteristics

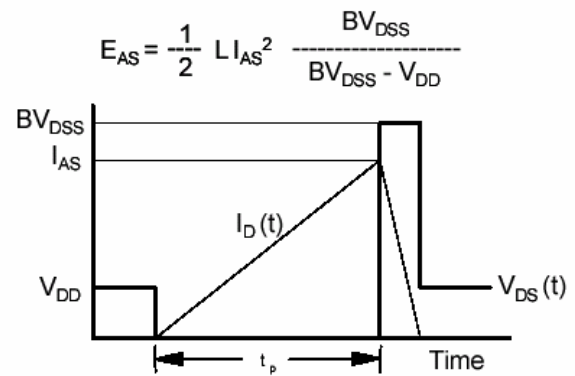
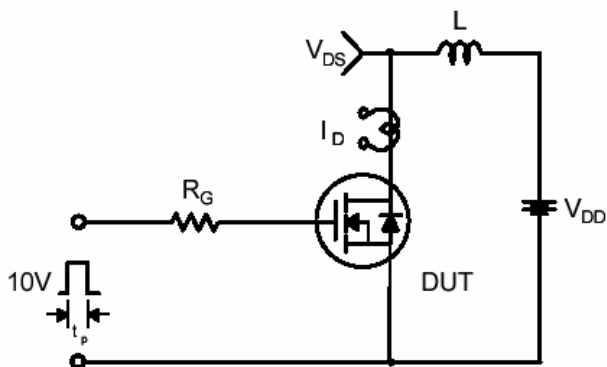
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms





## Typical Characteristics

Peak Diode Recovery dv/dt Test Circuit & Waveforms

