Shantou Huashan Electronic Devices Co.,Ltd.

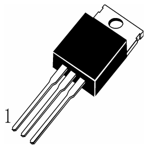
HFP80N75

N-Channel Enhancement Mode Field Effect Transistor

■ Applications

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

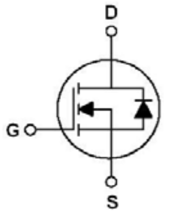
TO-220



1- G 2-D 3-S

■ Features

- 80A, 75V(See Note), R_{DS}(on) <11mVΩ@V_{GS} = 10 V
- Fast switching
- 100% avalanche tested
- Minimize input capacitance and gate charge
- Equivalent Type:ME80N75



■ Maximum Ratings (Ta=25℃ unless otherwise specified)

T_{stg}——Storage Temperature ---------------------------- −55~150℃

T_j ——Operating Junction Temperature ---------------------------- 150℃

V_{DSS} —— Drain-Source Voltage ----------------------------75V

V_{GSS} —— Gate-Source Voltage ---------------------------- ±20V

I_D —— Drain Current (Continuous)(T_c=25℃) ---------------------------- 80A

I_{DM} —— Pulsed Drain Current (Note 1)---------------------------- 300A

P_D —— Maximum Power Dissipation (T_c=25℃) ---------------------------- 100W

Derate Above 25℃ ---------------------------- 2.0W/℃

E_{AS}—— Pulsed Avalanche Energy (Note 2) ---------------------------- 400mJ

■ Thermal Characteristics

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

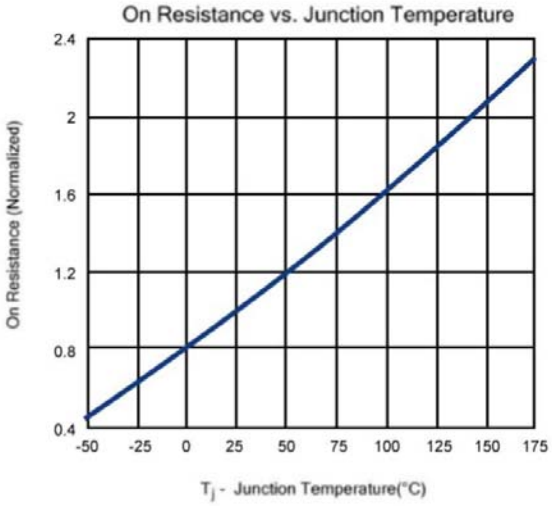
Electrical Characteristics（Ta=25℃ unless otherwise specified)

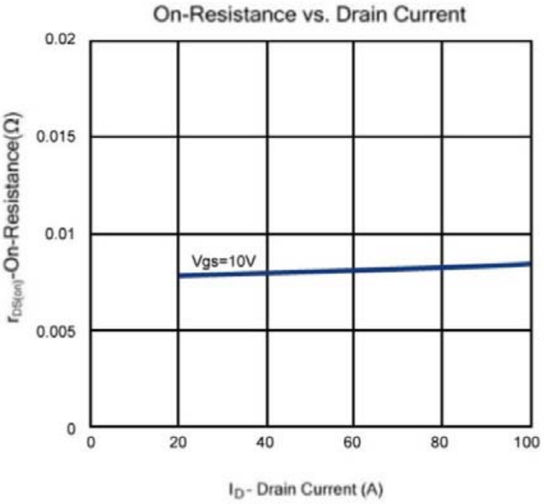
Symbol	Items	Min.	Typ.	Max.	Unit	Conditions
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	75			V	I_D=250μA ,V_{GS}=0V
I_{DSS}	Zero Gate Voltage Drain Current			1	μA	V_{DS} =75V, V_{GS}=0V
				10	μA	V_{DS} =75V, V_{GS}=0V,Tj=125℃
I_{GSS}	Gate – Body Leakage			±100	nA	V_{GS}= ±20V , V_{DS} =0V
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	2.0		4.0	V	V_{DS} = V_{GS} , I_D=250μA
$R_{DS(on)}$	Static Drain-Source On-Resistance			11	mΩ	V_{GS}=10V, I_D=40A (Note 3)
Dynamic Characteristics and Switching Characteristics						
Ciss	Input Capacitance		6200		pF	V_{DS} = 20 V, V_{GS} = 0V, f = 1.0 MHz
Coss	Output Capacitance		437		pF	
Crss	Reverse Transfer Capacitance		144		pF	
$t_{d(on)}$	Turn - On Delay Time		60		nS	V_{DS} = 30V, V_{GS} = 10 V, R_L =15 Ω ,R_G= 10 Ω (Note 3)
tr	Rise Time		43		nS	
$t_{d(off)}$	Turn - Off Delay Time		159		nS	
t_f	Fall Time		47		nS	
Qg	Total Gate Charge		27		nC	V_{DS}=60V, ID=75A, V_{GS} = 4.5 V (Note 3)
Qgs	Gate–Source Charge		36		nC	
Qgd	Gate–Drain Charge		50		nC	
Rg	Gate Resistance		0.8		Ω	f=1MHz
Drain-Source Diode Characteristics and Maximun Ratings						
I_S	Continuous Source–Drain Diode Forward Current			80	A	
I_{SM}	Pulsed Drain-Source Diode Forward Current			300	A	
V_{SD}	Source–Drain Diode Forward On–Voltage			1.5	V	I_S=40A,V_{GS}=0(Note 3)

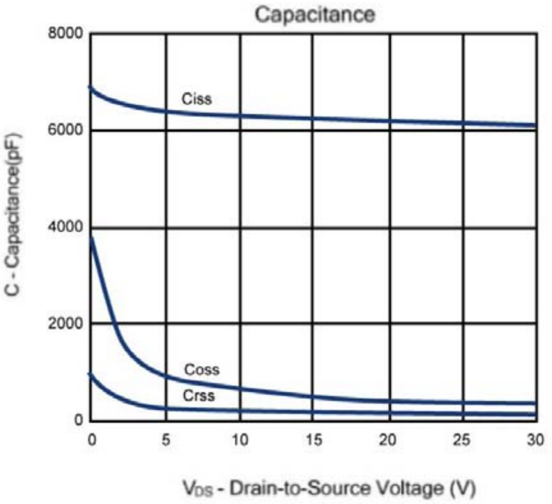
Notes:

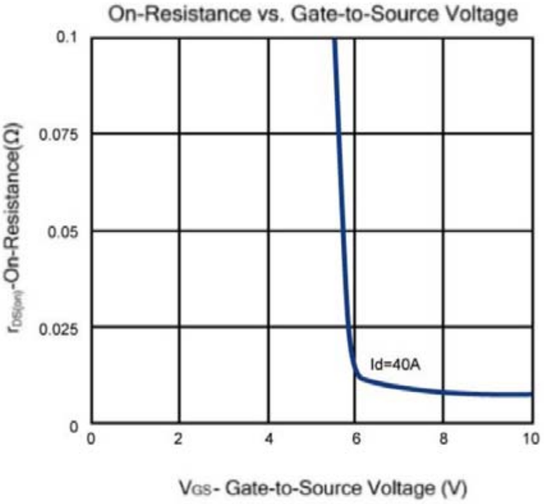
1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_D=30A, V_{DD}=37.5V, Starting T_J=25℃
3. Pulse Test: Pulse width≤300μS, Duty Cycle≤2%

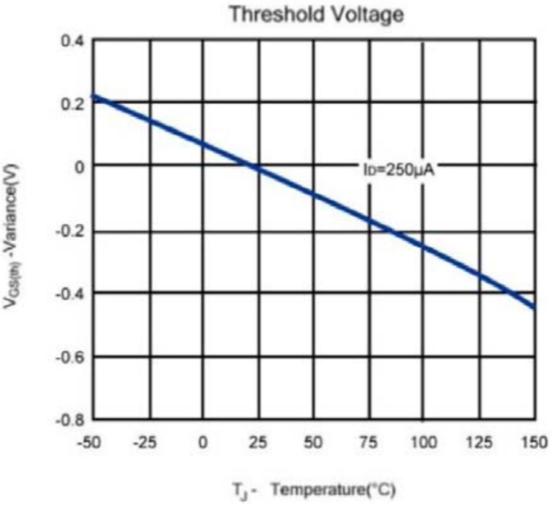
Typical Characteristics

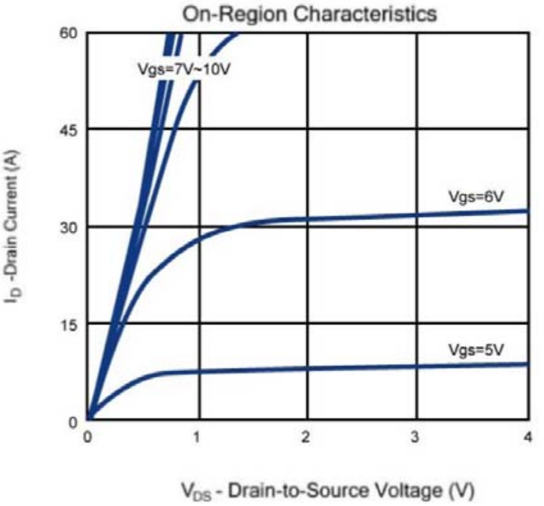

On Resistance vs. Junction Temperature


On-Resistance vs. Drain Current

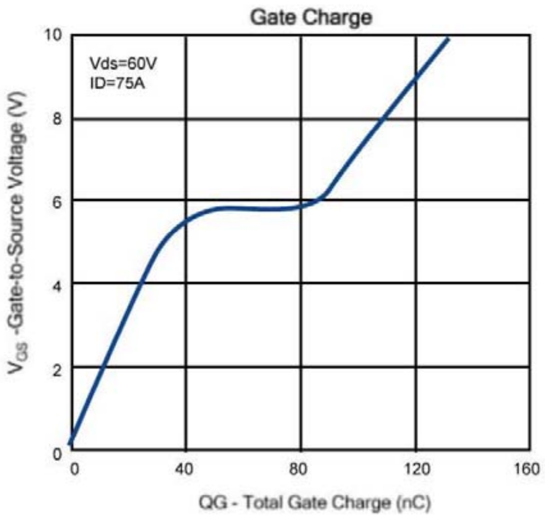

Capacitance

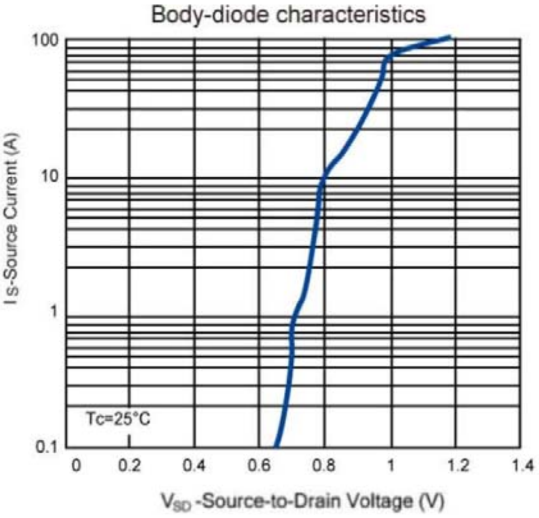

On-Resistance vs. Gate-to-Source Voltage


Threshold Voltage


On-Region Characteristics

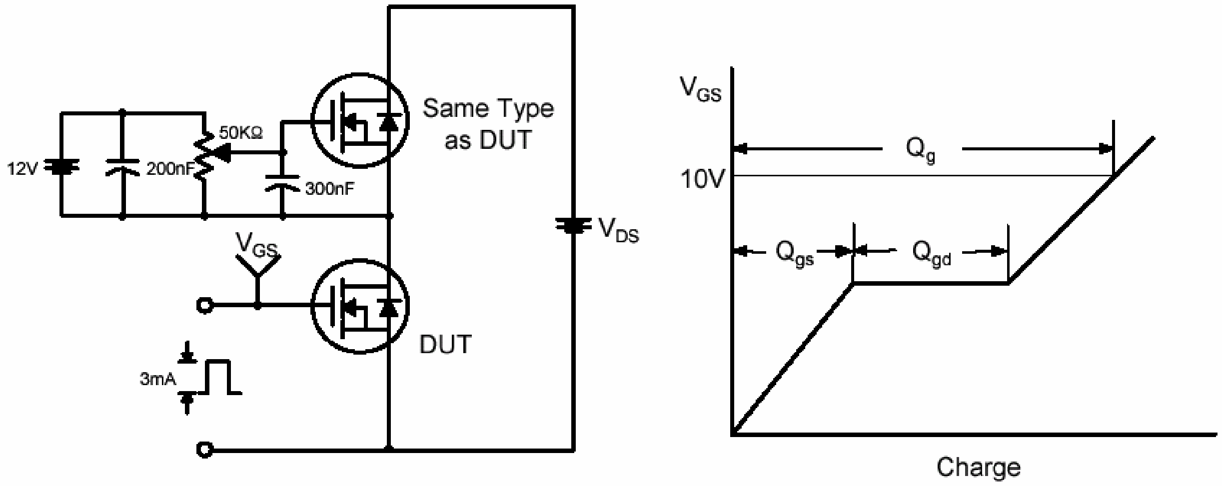
Typical Characteristics



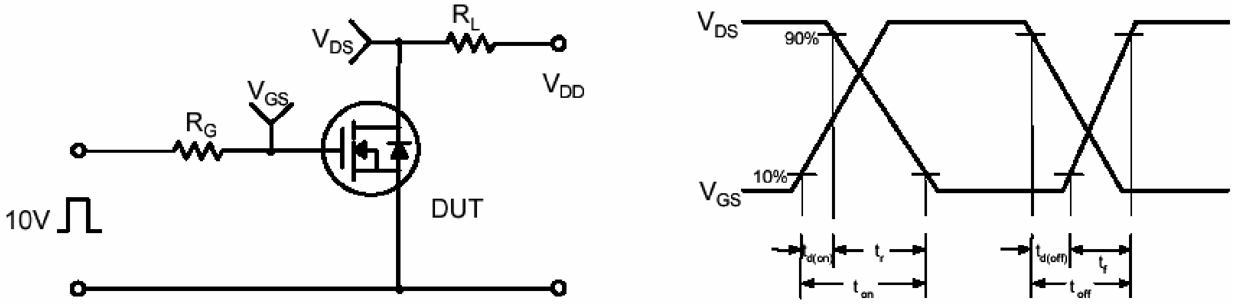


■ Typical Characteristics

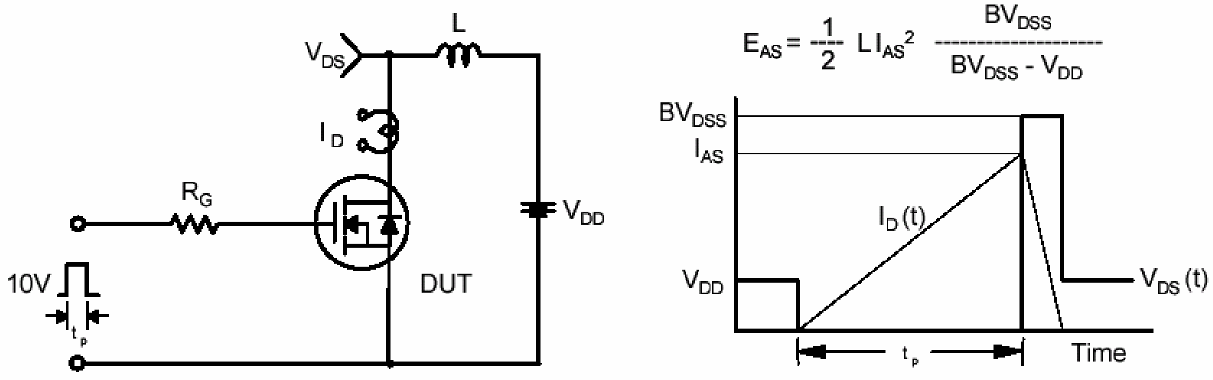
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Typical Characteristics

Peak Diode Recovery dv/dt Test Circuit & Waveforms