

H3N80D

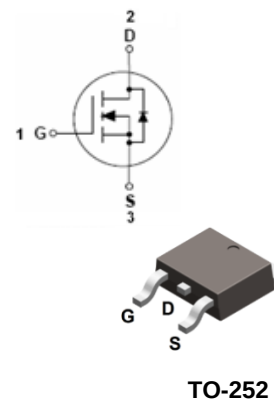
N-Channel Enhancement Mode MOSFET

Features

- Proprietary new planar technology
- Low gate charge minimize switching loss
- Fast recovery body diode

Mechanical Data

- Case: TO-252
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



TO-252

Maximum Ratings (@ $T_c = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	800	V
Gate-to-Source Voltage	V_{GSS}	± 30	V
Continuous Drain Current ($T_c = 25^\circ\text{C}$)	I_D	3	A
Continuous Drain Current ($T_c = 100^\circ\text{C}$)		1.9	A
Pulsed Drain Current ($V_{GS} = 10\text{V}$) ^{*1}	I_{DM}	12	A
Single Pulse Avalanche Energy ^{*3}	E_{AS}	120	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_c = 25^\circ\text{C}$)	P_D	75	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.67	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	800	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 800V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
		V _{DS} = 640V, V _{GS} = 0V, T _J = 125°C	-	-	100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±30V, V _{DS} = 0V	-	-	±100	nA
On Characteristics *2						
R _{DS(ON)}	Static Drain-Source On-resistance	V _{GS} = 10V, I _D = 2.0A	-	-	3.8	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	3	-	4	V
g _{fs}	Forward Transconductance	V _{DS} = 15V, I _D = 3A	-	5.5	-	S
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	490	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 25V	-	25	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	50	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 400V	-	10	-	ns
t _r	Turn-on Rise Time	V _{GS} = 10V	-	10	-	
t _{d(OFF)}	Turn-Off Delay Time	R _G = 12Ω	-	30	-	
t _f	Turn-Off Fall Time	I _D = 3A	-	15	-	
Q _G	Total Gate-Charge	V _{DD} =400V	-	16	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 10V	-	3	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 3A	-	6	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _{SD} = 2A, V _{GS} = 0V	-	-	1.4	V
I _S	Continuous Source Current		-	-	3	A
I _{SM}	Pulsed Source Current		-	-	12	A
t _{rr}	Reverse Recovery Time	I _F = 3A, V _{GS} = 0V	-	135	-	ns
Q _{rr}	Reverse Recovery Charge	dI _F /d _t = 100A/us	-	446	-	nC

Notes:

1. Repetitive rating; pulse width limited by maximum junction temperature
2. The data tested by pulsed, pulse width $\leq 380\mu s$, duty cycle $\leq 2\%$
3. $L = 10\text{mH}$, $I_D = 5.5A$, Start $T_J = 25^\circ\text{C}$

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

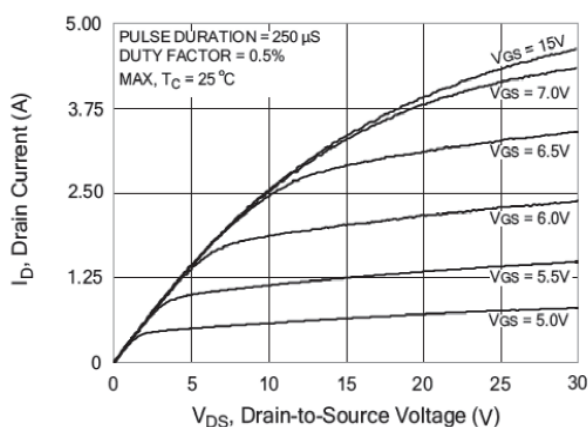


Fig 1 Typical Output Characteristics

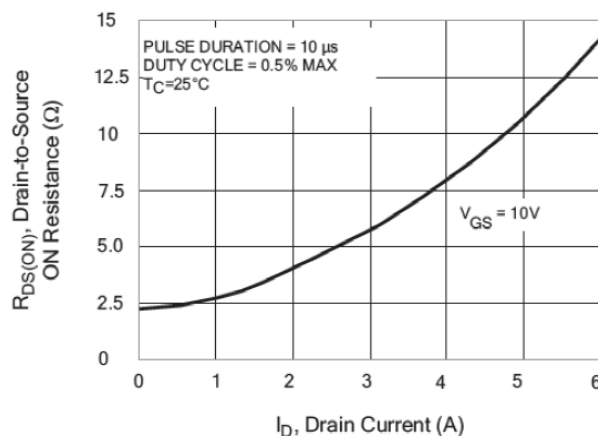


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

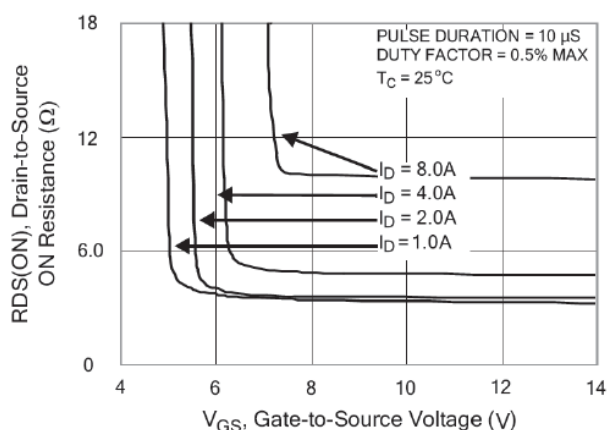


Fig 3 On-Resistance vs. Gate-Source Voltage

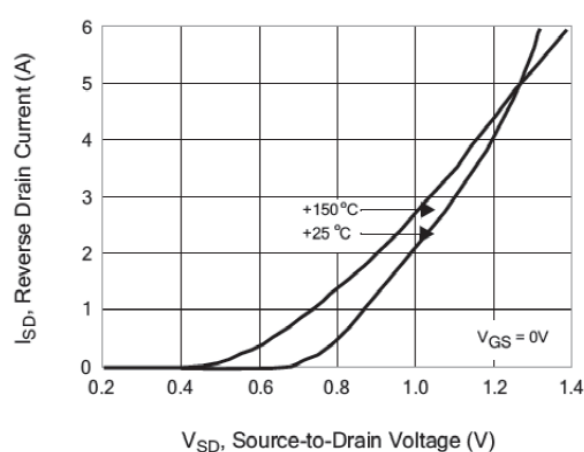


Fig 4 Body-Diode Characteristics

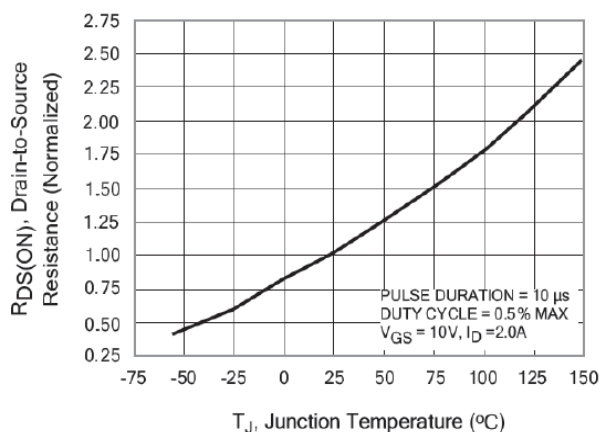


Fig 5 On-Resistance vs. Junction Temperature

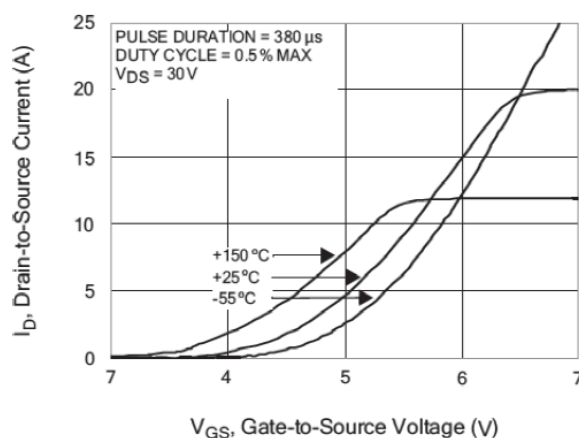


Fig 6 Transfer Characteristics

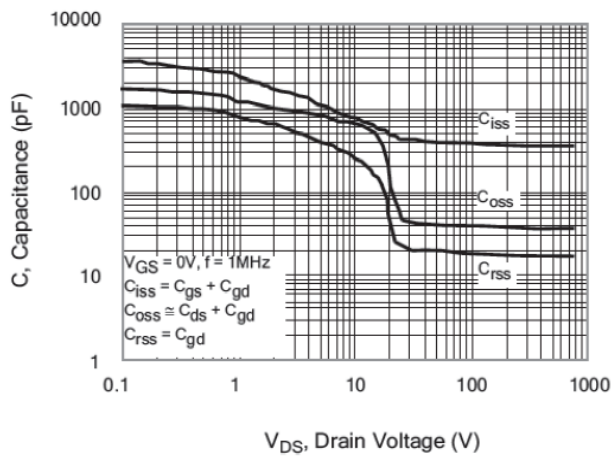


Fig 7 Capacitance Characteristics

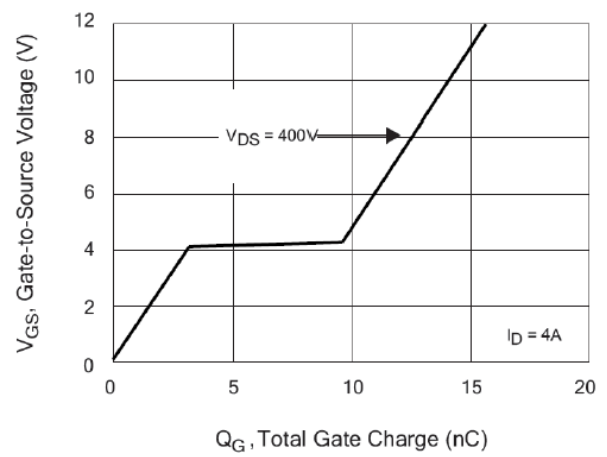


Fig 8 Gate-Charge Characteristics

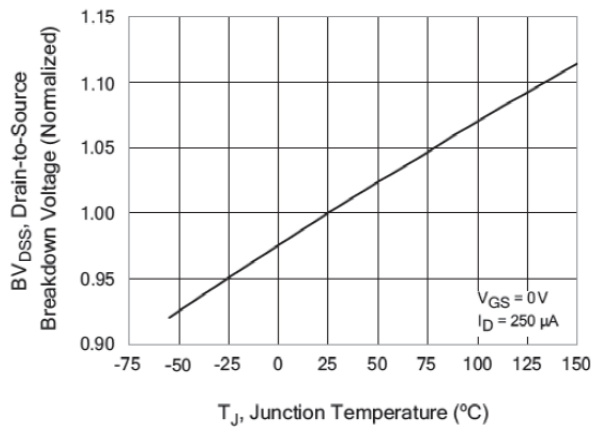


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

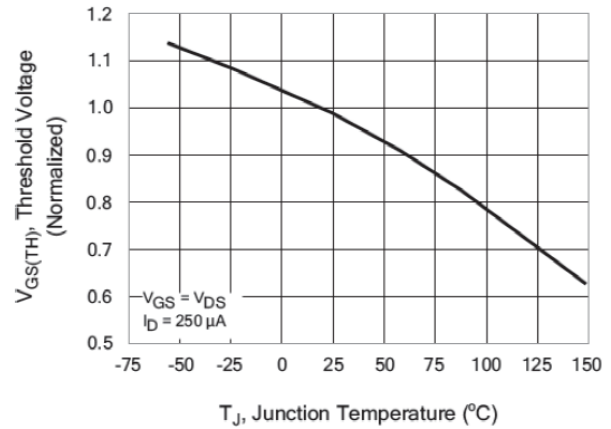


Fig 10 $V_{GS(th)}$ vs. Junction Temperature

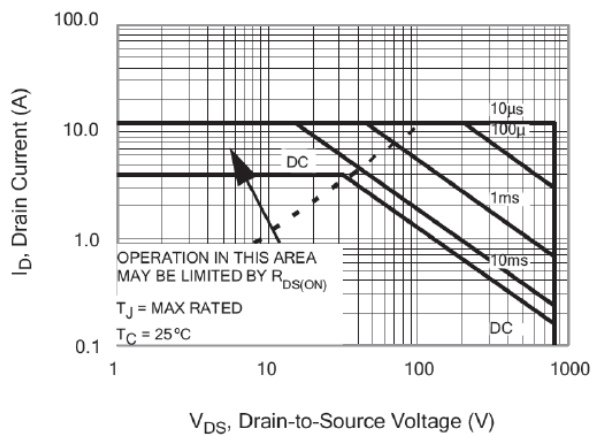
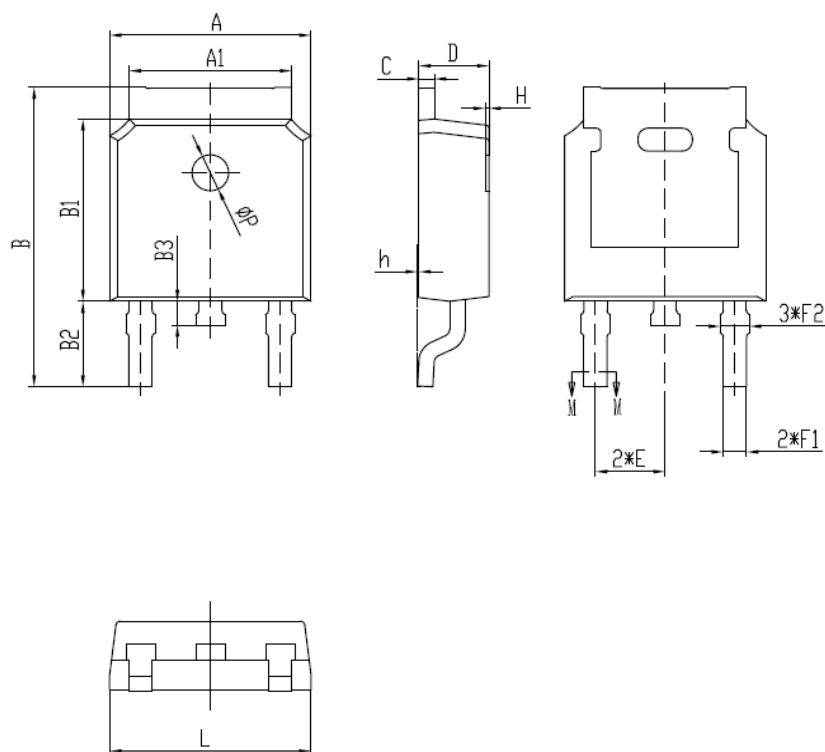


Fig 11 Safe Operation Area

Package Outline Dimensions (Unit: mm)



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	6.50	6.70
A1	5.16	5.46
B	9.77	10.17
B1	6.00	6.20
B2	2.60	3.00
B3	0.70	0.90
C	0.45	0.61
D	2.20	2.40
E	2.186	2.386
F1	0.67	0.87
F2	0.76	0.96
H	0.00	0.30
h	0.00	0.127
L	6.50	6.70
ϕ P	1.10	1.30