



### General Description

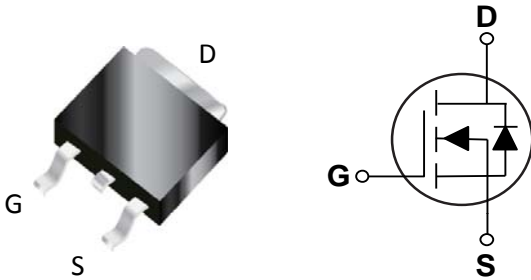
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

$BV_{DSS}$	$R_{DS(ON)}$	$I_D$
100 V	200 m $\Omega$	8 A

### Features

- 100V, 8A,  $R_{DS(ON)}=200m\Omega @V_{GS}=10V$
- Improved dv/dt capability
- Fast switching

TO-252 Pin Configuration



### Applications

- Networking
- Load Switch
- LED applications

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Drain Current - Continuous ( $T_C=25^\circ\text{C}$ )	8	A
	Drain Current - Continuous ( $T_C=100^\circ\text{C}$ )	4.8	
$I_{DM}$	Drain Current - Pulsed (NOTE 1)	32	A
$P_D$	Power Dissipation ( $T_C=25^\circ\text{C}$ )	32	W
	Power Dissipation - Derate above $25^\circ\text{C}$	0.256	
$T_J$	Operating Junction Temperature Range	-50 to 150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
Marking Code		NM200	

### Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	62	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	38	$^\circ\text{C/W}$



**Electrical Characteristics (T<sub>J</sub>=25°C, unless otherwise noted)**

**Off Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	100	---	---	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =80V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C	---	---	10	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA

**On Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =2A	---	160	200	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =1A	---	170	210	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.2	1.8	2.5	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =1A	---	5	---	S

**Dynamic and switching Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q <sub>g</sub>	Total Gate Charge (NOTE 2、3)	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =2A	---	13.4	21	nC
Q <sub>gs</sub>	Gate-Source Charge (NOTE 2、3)		---	2.9	6	
Q <sub>gd</sub>	Gate-Drain Charge (NOTE 2、3)		---	1.7	4	
T <sub>d(on)</sub>	Turn-On Delay Time (NOTE 2、3)	V <sub>DD</sub> =30V, V <sub>GS</sub> =10V, R <sub>G</sub> =3.3Ω, I <sub>D</sub> =1A	---	1.6	3	nS
T <sub>r</sub>	Rise Time (NOTE 2、3)		---	6.6	13	
T <sub>d(off)</sub>	Turn-Off Delay Time (NOTE 2、3)		---	11.5	22	
T <sub>f</sub>	Fall Time (NOTE 2、3)		---	3.6	7	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1MHz	---	820	1190	pF
C <sub>oss</sub>	Output Capacitance		---	35	55	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	20	30	
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz	---	1.3	2.6	Ω

**Drain-Source Diode Characteristics and Ratings**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	8	A
I <sub>SM</sub>	Pulsed Source Current		---	---	16	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	---	---	1	V

NOTES :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.



Characteristics Curves

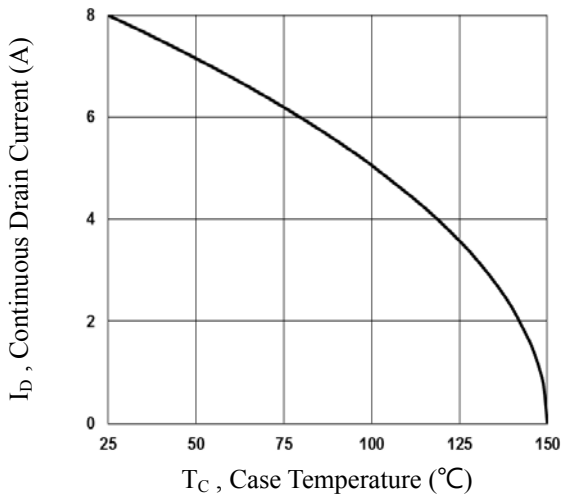


Fig.1 Continuous Drain Current vs.  $T_C$

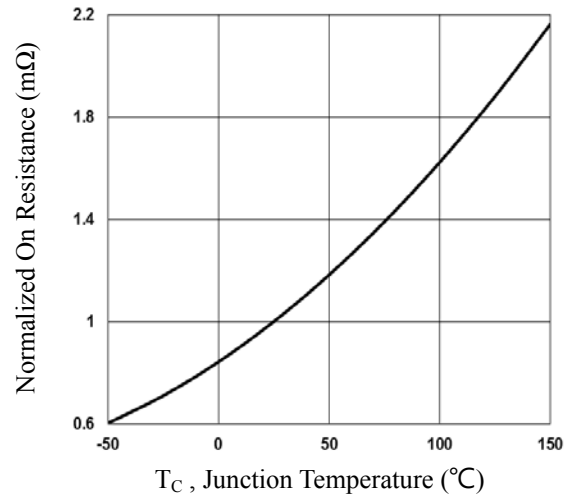


Fig.2 Continuous Drain Current vs.  $T_C$

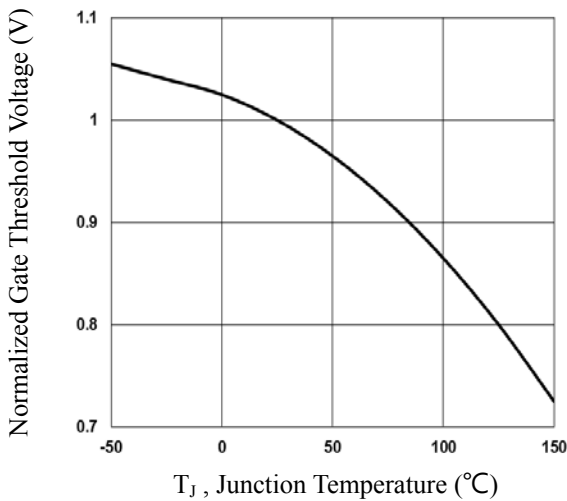


Fig.3 Normalized  $V_{th}$  vs.  $T_J$

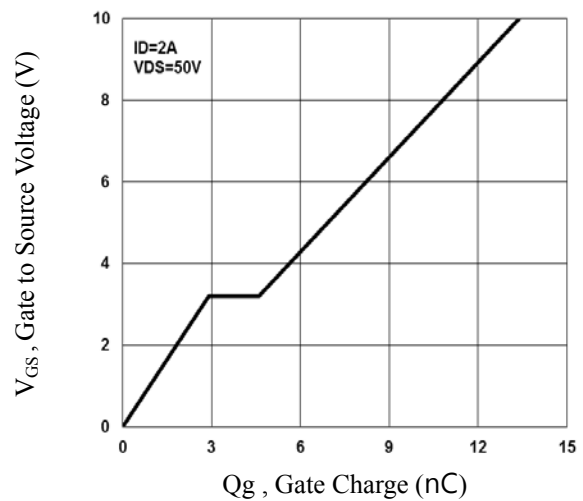


Fig.4 Gate Charge Waveform

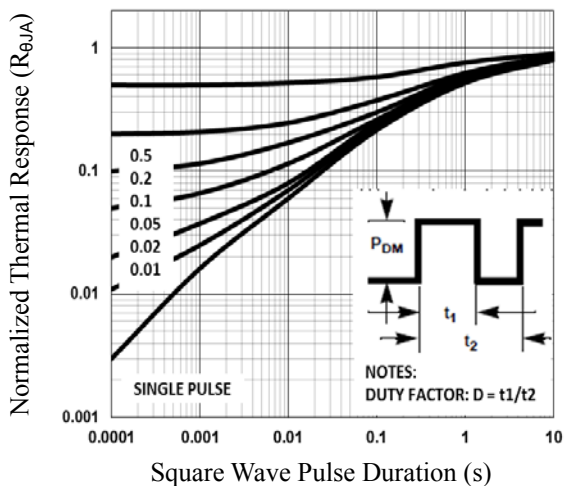


Fig.5 Normalized Transient Impedance

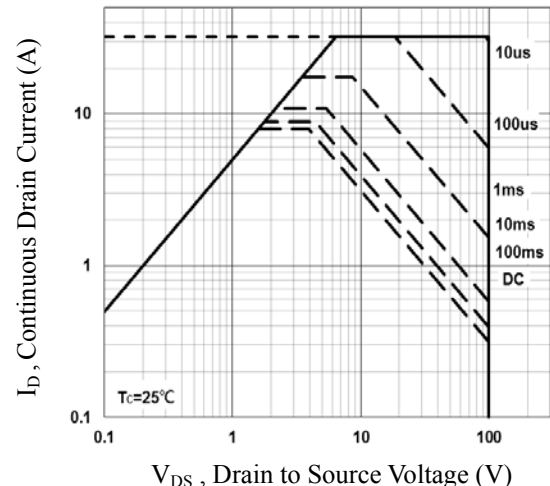


Fig.6 Maximum Safe Operation Area



Characteristics Curves

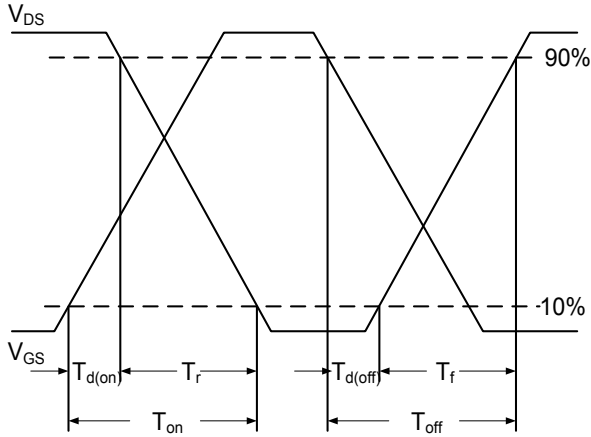


Fig.7 Switching Time Waveform

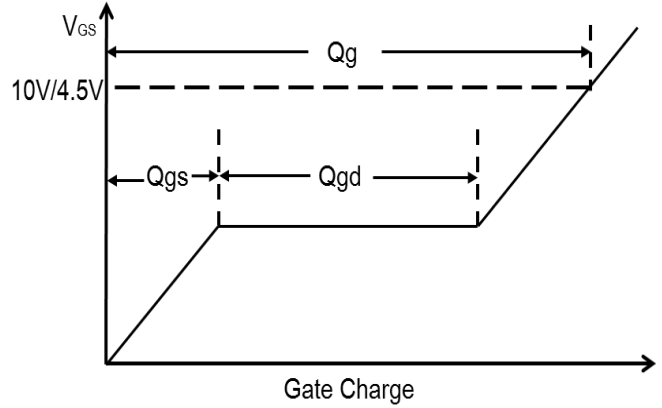
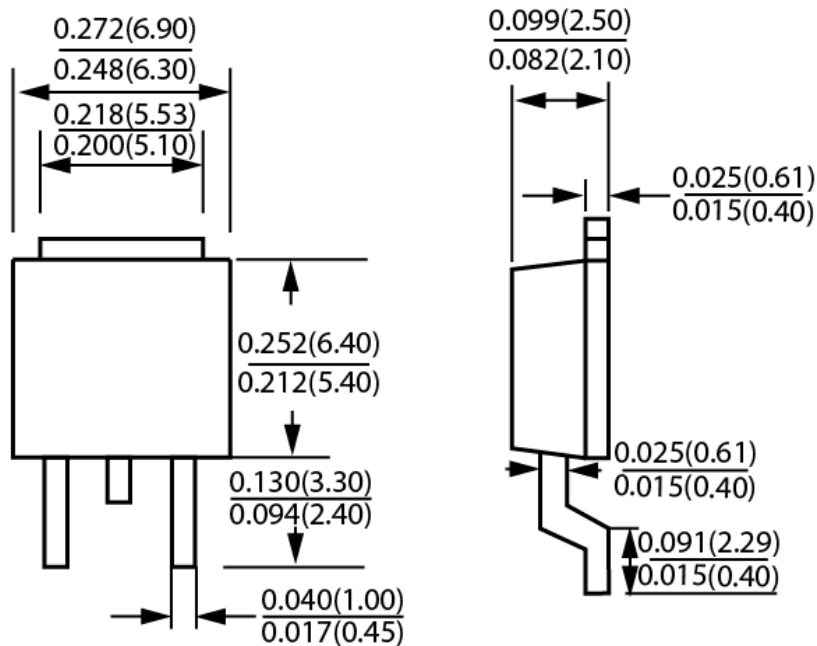


Fig.8 Gate Charge Waveform

Package Outline Dimensions



TO-252

Dimensions in inches and (millimeters)



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