

GSMDD6966A

60V N-Channel MOSFETs

Product 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.

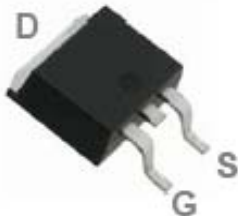
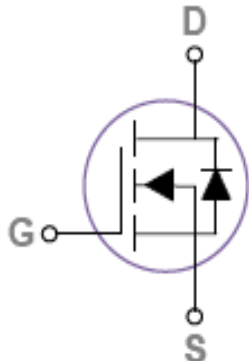
Features

- 60V, 55A, $R_{DS(ON)}=8.2m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- TO-252-2L package design

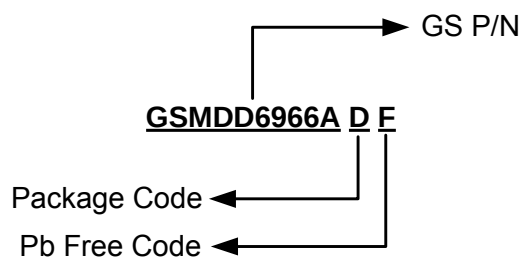
Applications

- Networking
- Load Switch
- LED Applications

Packages & Pin Assignments

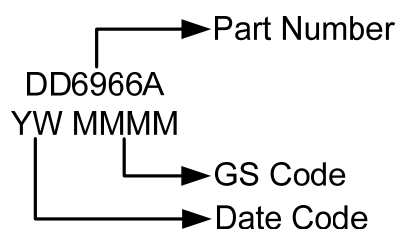
GSMDD6966ADF (TO-252-2L)		
 Top View		
Description		
Gate		
Source		
Drain		

Ordering Information



Part Number	Package	Quantity Reel
GSMDD6966ADF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

T_C=25°C Unless otherwise noted

Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		60	V
V _{GS}	Gate-Source Voltage		±25	V
I _D	Continuous Drain Current	T _C =25°C	55	A
		T _C =100°C	34.8	
I _{DM}	Pulsed Drain Current (Note 1)		220	A
EAS	Single Pulse Avalanche Energy (Note 2)		238	mJ
IAS	Single Pulse Avalanche Current (Note 2)		69	A
P _D	Power Dissipation (T _C =25°C)		102	W
	Power Dissipation (Derate above 25°C)		0.82	W/°C
T _J	Operating Junction Temperature Range		-50 to +150	°C
T _{STG}	Storage Temperature Range		-50 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		62	°C/W
R _{θJC}	Thermal Resistance-Junction to Case		1.22	°C/W

Note 1: Repetitive Rating: Pulsed width limited by maximum junction temperature.

Note 2: V_{DD}=25V, V_{GS}=10V, L=0.1mH, IAS=69A, Starting T_J=25°C.

Electrical Characteristics

$T_J=25^{\circ}\text{C}$ Unless otherwise noted

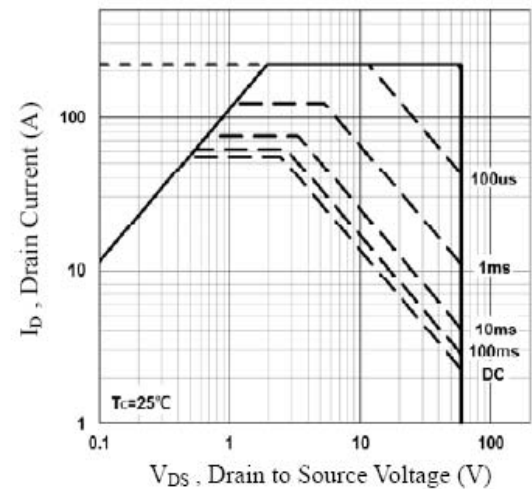
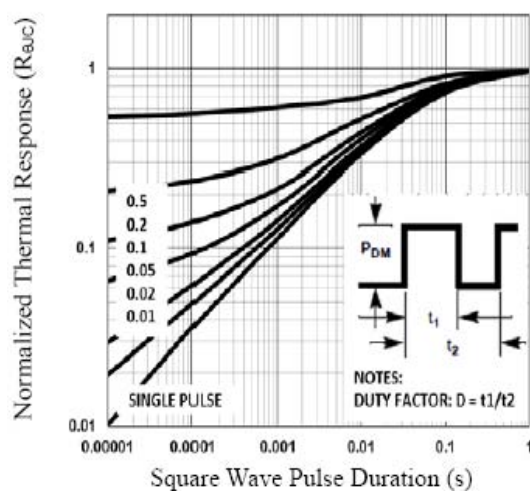
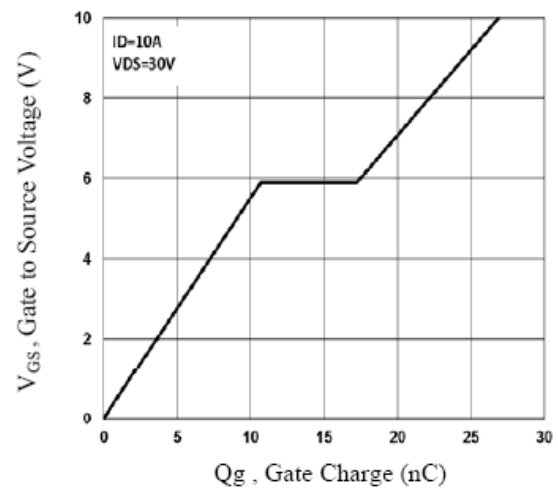
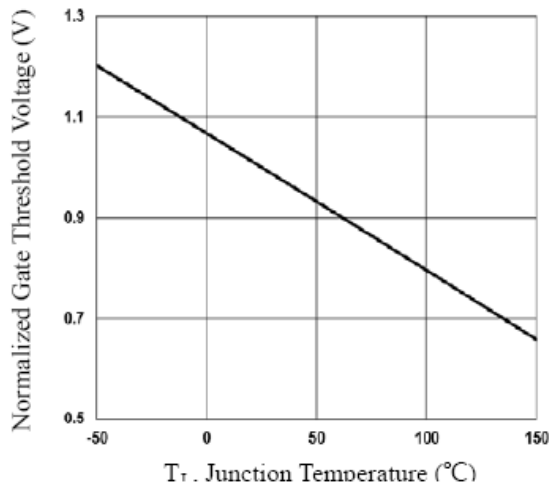
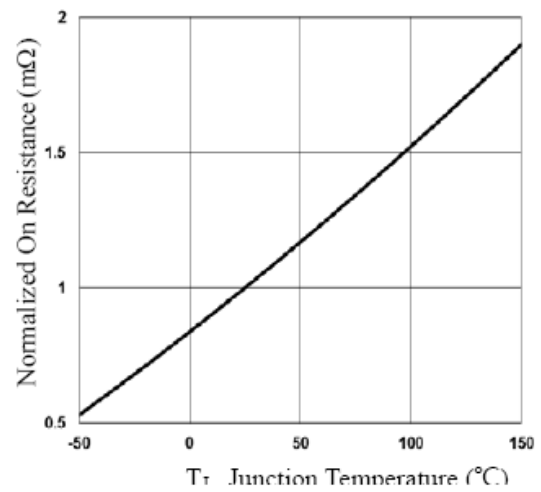
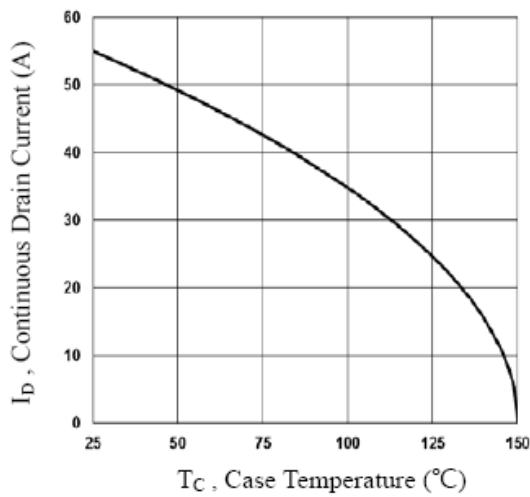
25°C Unless Otherwise Noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60			V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C, $I_D=1mA$		0.05		V/°C
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			-5		mV/°C
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 25V$			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$			1	µA
		$V_{DS}=48V, V_{GS}=0V,$ $T_J=125^\circ C$			10	
I_S	Continuous Source Current	$V_G=V_D=0V,$ Force Current			55	A
I_{SM}	Pulsed Source Current				110	
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=20A$		6.8	8.2	mΩ
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=3A$		10		S
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=1A$			1	V
Dynamic						
Q_g	Total Gate Charge (Note 3,4)	$V_{DS}=30V, V_{GS}=10V,$ $I_D=10A$		26.9	48	nC
Q_{gs}	Gate-Source Charge (Note 3,4)			10.7	20	
Q_{gd}	Gate-Drain Charge (Note 3,4)			6.55	13	
C_{iss}	Input Capacitance	$V_{DS}=30V, V_{GS}=0V,$ $f=1MHz$		1690	2600	pF
C_{oss}	Output Capacitance			294	450	
C_{rss}	Reverse Transfer Capacitance			90	180	
$t_{d(on)}$	Turn-On Time (Note 3,4)	$V_{DD}=30V, I_D=1A,$ $V_{GS}=10V, R_G=6\Omega$		16	30	ns
t_r				12	24	
$t_{d(off)}$	Turn-Off Time (Note 3,4)			32	55	
t_f				23	40	
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V,$ $f=1MHz$		1.3	2.5	Ω

Note 3: The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

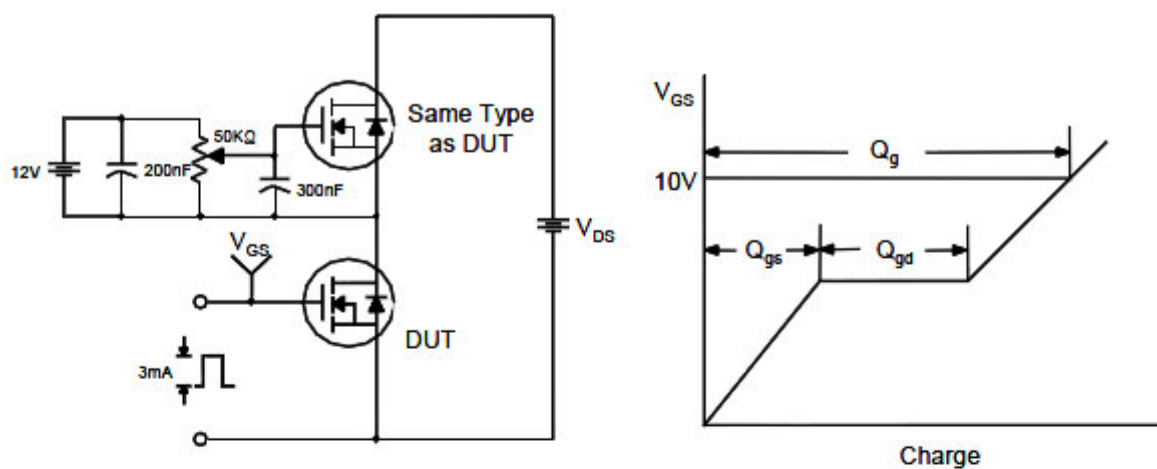
Note 4: Essentially independent of operating temperature.

Typical Performance Characteristics

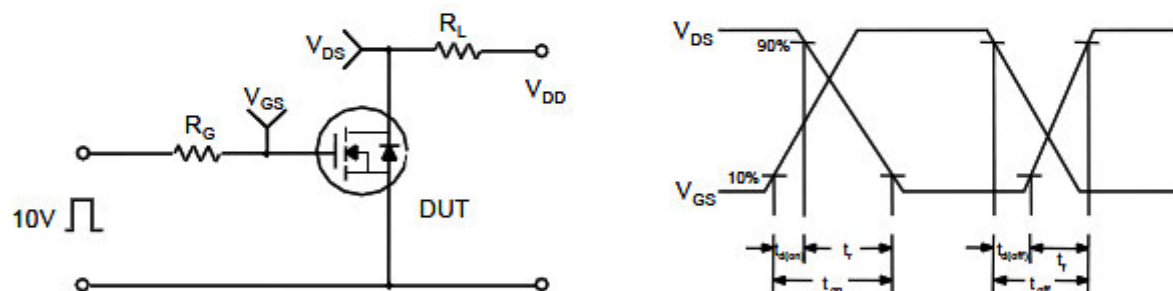


Typical Performance Characteristics (Continue)

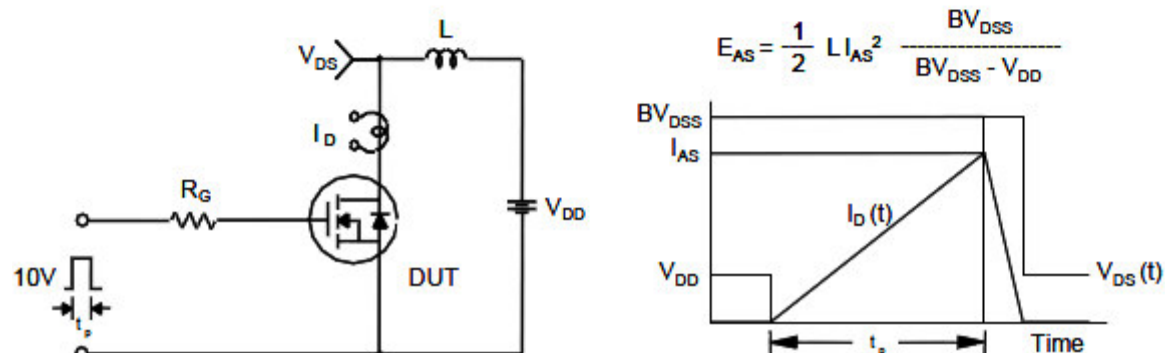
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

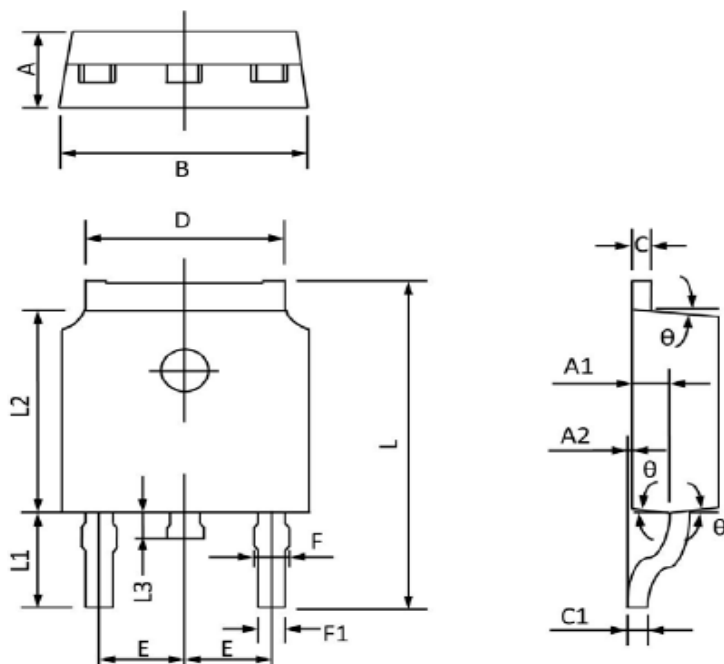


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

TO-252-2L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.20	2.40	0.087	0.094
A1	0.91	1.11	0.036	0.044
A2	0.00	0.15	0.000	0.006
B	6.40	6.80	0.252	0.268
C	0.46	0.58	0.018	0.023
C1	0.46	0.58	0.018	0.023
D	5.10	5.50	0.201	0.217
E	2.186	2.386	0.086	0.094
F	0.60	0.94	0.024	0.037
F1	0.50	0.86	0.020	0.034
L	9.40	10.40	0.370	0.409
L1	2.40	3.00	0.094	0.118
L2	5.40	6.20	0.213	0.244
L3	0.60	1.20	0.024	0.047
θ	3°	9°	3°	9°

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