

GSMDD6965A

60V P-Channel MOSFETs

Product Description

These P-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.

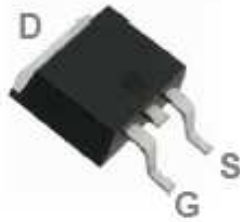
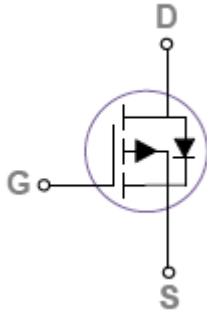
Features

- -60V, -50A, $R_{DS(ON)}=22m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- 100% EAS Guaranteed

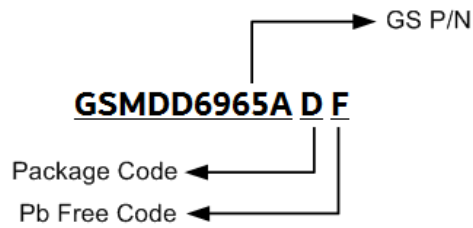
Applications

- Networking
- Load Switch
- LED applications

Packages & Pin Assignments

GSMDD6965ADF (TO-252-2L)	
 <p>Top View</p>	
Description	
Gate	
Source	
Drain	

Ordering Information



Part Number	Package	Quantity Reel
GSMDD6965ADF	TO-252-2L	2500 PCS

Absolute Maximum Ratings

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

Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_C=25^{\circ}\text{C}$	-50
		$T_C=100^{\circ}\text{C}$	-31
I_{DM}	Pulsed Drain Current (Note 1)	-200	A
EAS	Single Pulse Avalanche Energy (Note 2)	245	mJ
IAS	Single Pulse Avalanche Current (Note 2)	-70	A
P_D	Power Dissipation ($T_C=25^{\circ}\text{C}$)	102	W
	Power Dissipation (Derate above 25°C)	0.82	W/ $^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.22	$^{\circ}\text{C}/\text{W}$

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

Note 2: $V_{DD}=-30\text{V}$, $V_{GS}=-10\text{V}$, $L=0.1\text{mH}$, $I_{AS}=-70\text{A}$, Starting $T_J=25^{\circ}\text{C}$.

Electrical Characteristics

T_J=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 =250μA	-100			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-2	-3	-4	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-60V, V _{GS} =0V T _J =25°C			-1	μA
		V _{DS} =-48V, V _{GS} =0V, T _J =85°C			-10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			-50	A
I _{SM}	Pulsed Source Current				-100	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-10V, I _D =-15A		18	22	mΩ
		V _{GS} =-6V, I _D =-8A		30	40	
g _{FS}	Forward Transconductance	V _{DS} =-10V, I _D =-5A		10		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1A, T _J =25°C			-1	V
Dynamic						
Q _g	Total Gate Charge (Note 3,4)	V _{DS} =-48V, V _{GS} =-10V, I _D =-10A		37.2	55	nC
Q _{gs}	Gate-Source Charge (Note 3,4)			10.4	15	
Q _{gd}	Gate-Drain Charge (Note 3,4)			10.5	16	
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz		2165	3200	pF
C _{oss}	Output Capacitance			318	480	
C _{rss}	Reverse Transfer Capacitance			102	150	
t _{d(on)}	Turn-On Time (Note 3,4)	V _{DD} =-48V, V _{GS} =-10V, R _G =25Ω, I _D =-5A		23.1	46	ns
t _r				76.2	150	
t _{d(off)}	Turn-Off Time (Note 3,4)			113.5	220	
t _f				28.6	56	

Note 3: The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.

Note 4: Essentially independent of operating temperature.

Typical Performance Characteristics

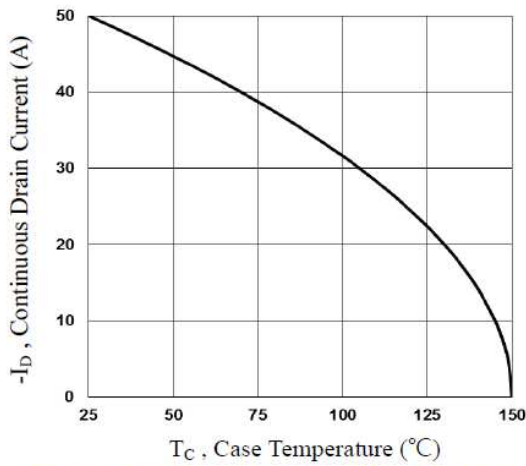


Fig.1 Continuous Drain Current vs. T_c

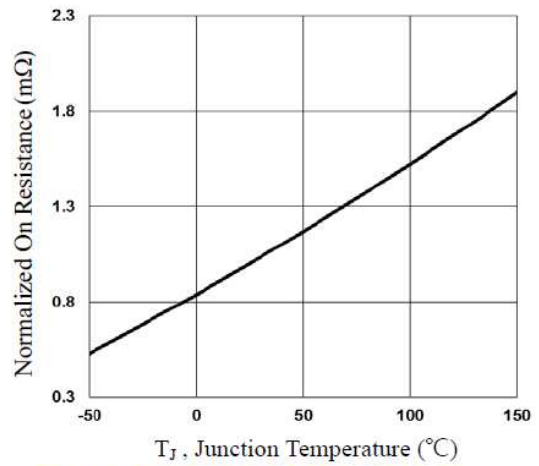


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

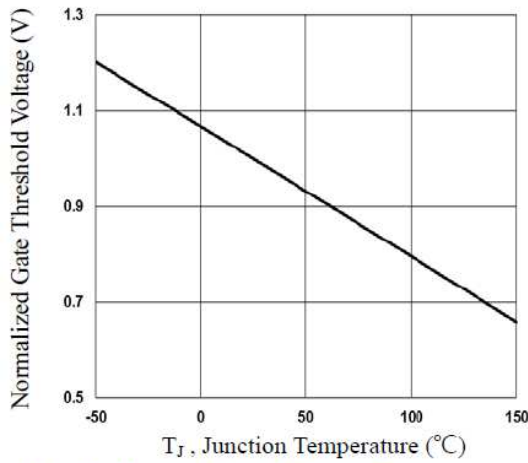


Fig.3 Normalized V_{th} vs. T_j

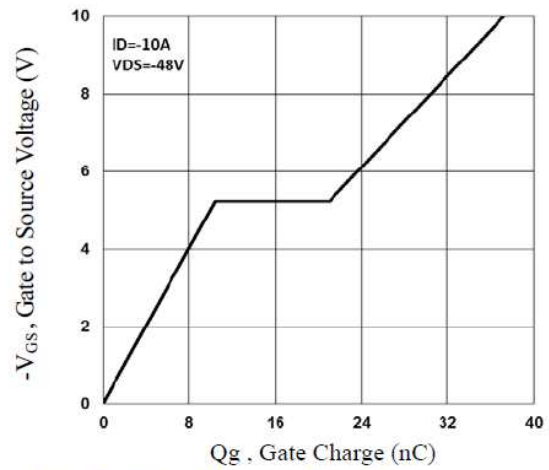


Fig.4 Gate Charge Waveform

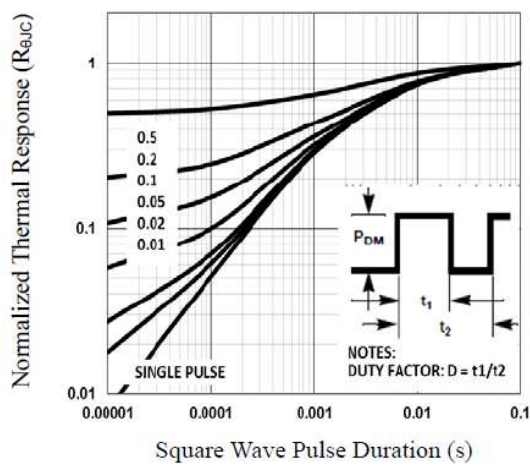


Fig.5 Normalized Transient Impedance

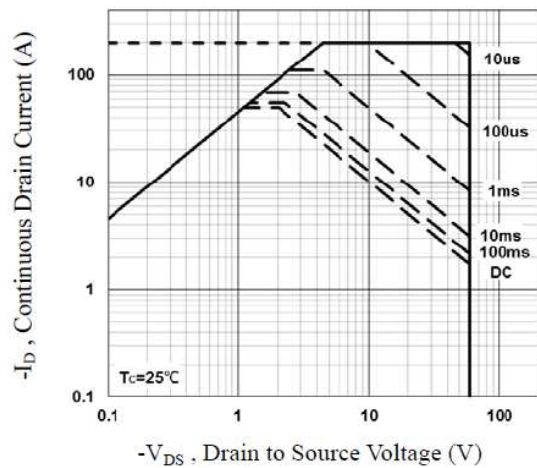


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

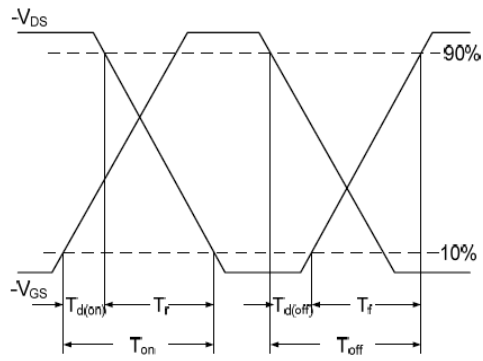


Fig.7 Switching Time Waveform

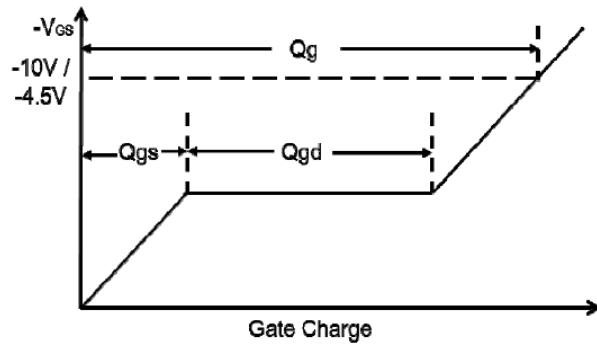
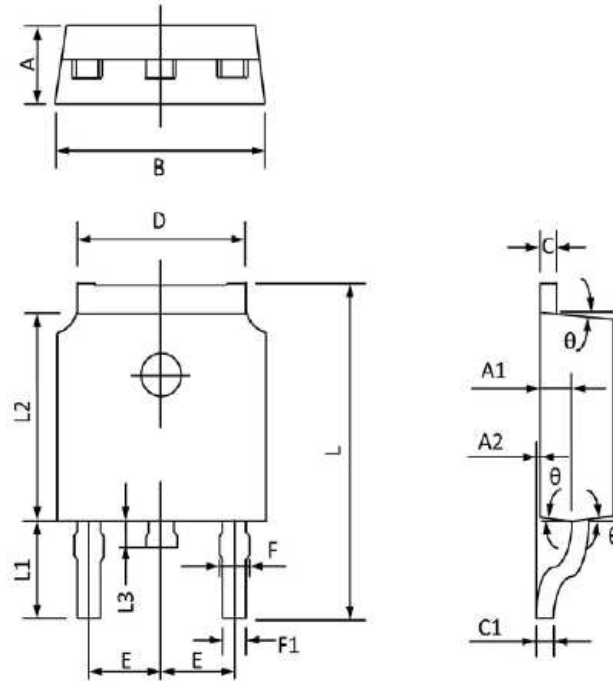


Fig.8 Gate Charge Waveform

Package Dimension

TO252 PACKAGE INFORMATION









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	0.45	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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