

GSMDP0902

100V 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

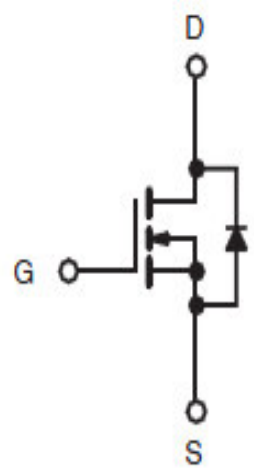
- 100V, 80A, $R_{DS(ON)}=13m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

Applications

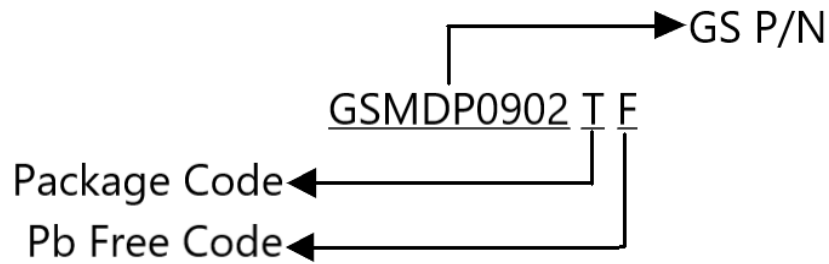
- Networking
- Load Switch
- LED Applications
- Quick Charger

Packages & Pin Assignments

GSMDP0902TF (TO-220)	
 Top View	
Pin	Description
1	Gate
2	Drain
3	Source

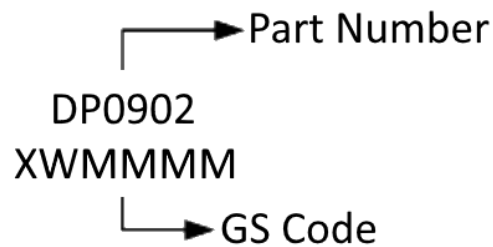


Ordering Information



Part Number	Package	Quantity Tube
GSMDP0902TF	TO-220	50 PCS

Marking Information



Absolute Maximum Ratings

T_c=25°C Unless otherwise noted

Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		100	V
V _{GS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	Tc=25°C	80	A
		Tc=100°C	50	
I _{DM}	Pulsed Drain Current		320	A
EAS	Single Pulse Avalanche Energy		205	mJ
IAS	Single Pulse Avalanche Current		64	A
P _D	Power Dissipation (Tc=25°C)		183	W
	Power Dissipation (Derate above 25°C)		1.47	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		0.68	°C/W

Electrical Characteristics

T_j=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100			V
△BV _{DSS} /△T _J	BV _{DSS} Temperature Coefficient	Reference to 25℃, I _D =1mA		0.05		V/℃
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	2	3	V
△V _{GS(th)}	V _{GS(th)} Temperature Coefficient			-5		mV/℃
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V			1	uA
		V _{DS} =80V, V _{GS} =0V, T _J =125℃			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			80	A
I _{SM}	Pulsed Source Current				160	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =15A		11	13	mΩ
		V _{GS} =6V, I _D =10A		11.5	14	mΩ
		V _{GS} =4.5V, I _D =8A		12.5	18	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	V _{DS} =80V, V _{GS} =4.5V, I _D =10A		47.2	85	nC
Q _{gs}	Gate-Source Charge			15.6	30	
Q _{gd}	Gate-Drain Charge			26.8	52	
C _{iSS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		5775	8500	pF
C _{oSS}	Output Capacitance			317	460	
C _{rSS}	Reverse Transfer Capacitance			115	180	
t _{d(on)}	Turn-On Time	V _{DD} =50V, I _D =1A, V _{GS} =10V, R _G =6Ω		35	70	ns
t _r				23	46	
t _{d(off)}	Turn-Off Time			67	135	
t _f				38	76	
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz		1.2	2.4	Ω

Typical Performance Characteristics

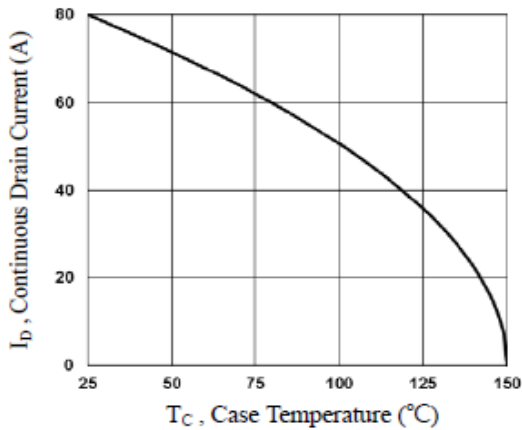


Fig.1 Continuous Drain Current vs. T_C

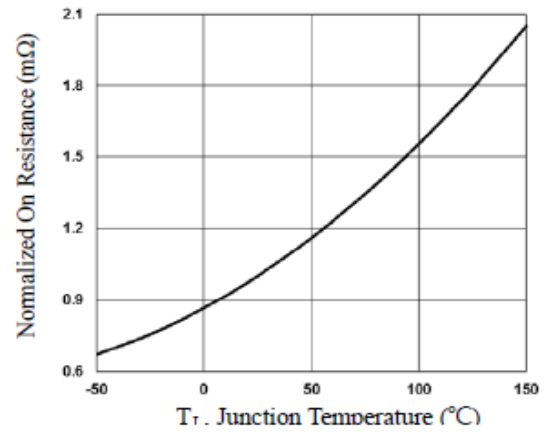


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

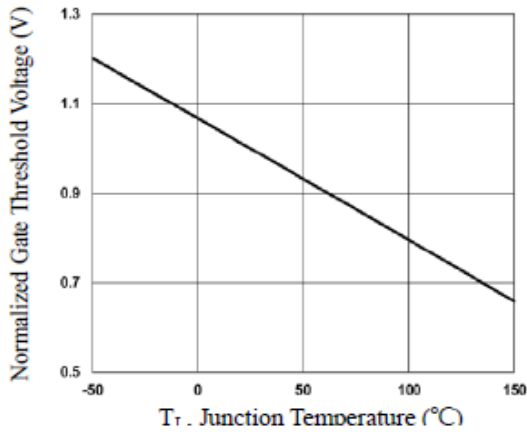


Fig.3 Normalized V_{th} vs. T_J

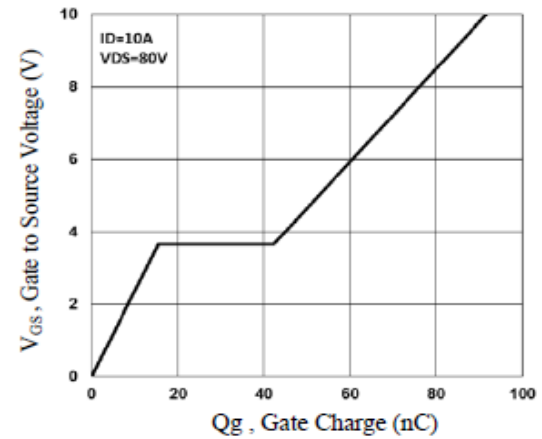


Fig.4 Gate Charge Characteristics

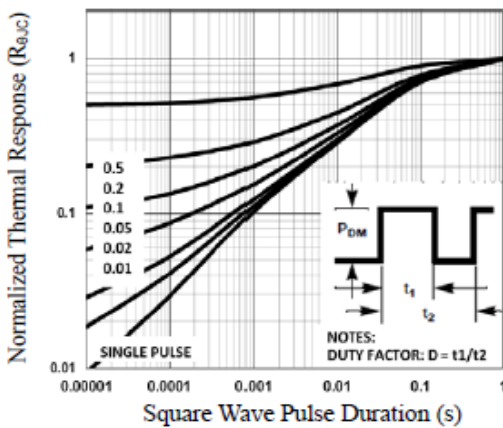


Fig.5 Normalized Transient Impedance

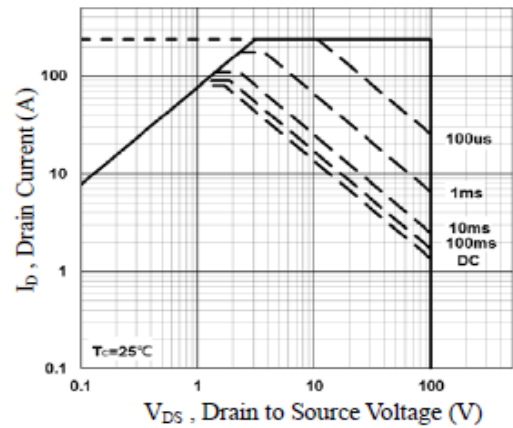


Fig.6 Maximum Safe Operation Area

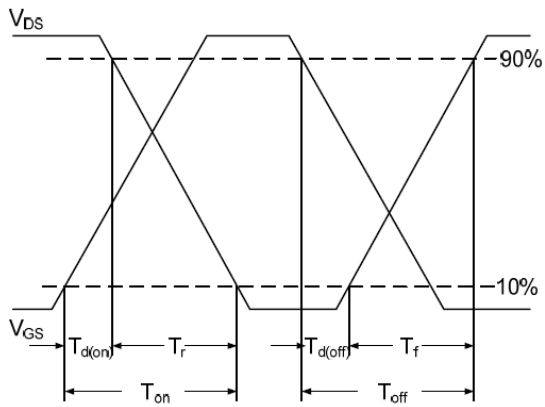


Fig.7 Switching Time Waveform

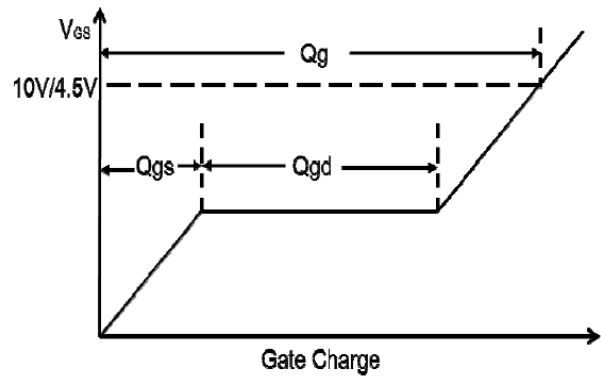
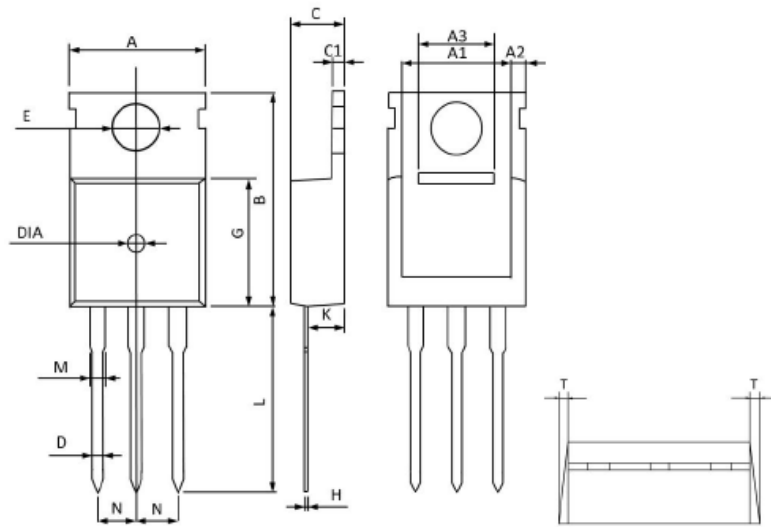


Fig.8 Gate Charge Waveform

Package Dimension

TO-220



Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	9.70	10.30	0.382	0.406
A1	8.44	8.84	0.332	0.348
A2	1.05	1.25	0.041	0.049
A3	5.10	5.30	0.201	0.209
B	15.40	16.20	0.606	0.638
C	4.28	4.68	0.169	0.184
C1	1.10	1.50	0.043	0.059
D	0.60	1.00	0.024	0.039
E	3.40	3.80	0.134	0.150
G	8.70	9.30	0.343	0.366
H	0.40	0.60	0.016	0.024
K	2.10	2.70	0.083	0.106
L	12.80	13.60	0.504	0.535
M	1.10	1.50	0.043	0.059
N	2.49	2.59	0.098	0.102
T	W0.35		W0.014	
DIA	Φ1.5(TYP)	Deep0.2(TYP)	Φ0.059(TYP)	Deep0.008(TYP)

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