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

Applications

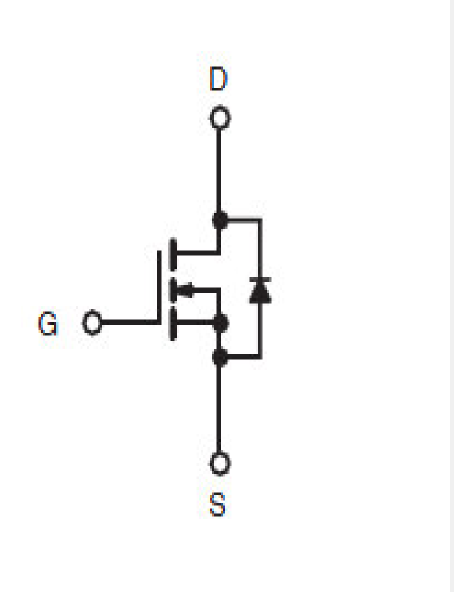
- Networking
- Load Switch
- LED Applications
- Quick Charger

Packages & Pin Assignments

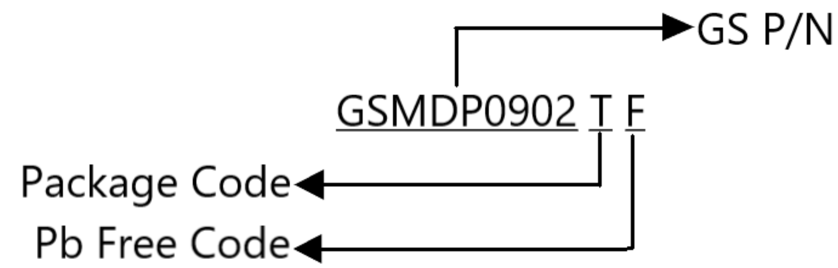
GSMDP0902TF (TO-220)

Top View

Pin	Description
1	Gate
2	Drain
3	Source

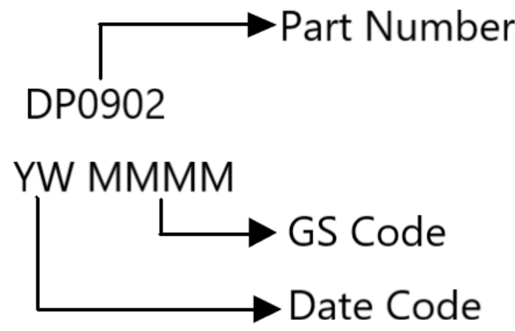


Ordering Information



Part Number	Package	Quantity Tube
GSMDP0902TF	TO-220	50 PCS

Marking Information



Absolute Maximum Ratings

T_C=25ºC 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℃	80	A
		Tc=100℃	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℃)		183	W
	Power Dissipation (Derate above 25℃)		1.47	W/℃
T_J	Operating Junction Temperature Range		-50 to +150	℃
T_{STG}	Storage Temperature Range		-50 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.68	℃/W

Electrical Characteristics

Tj=25℃ 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
$\triangle BV_{DSS}/\triangle T_J$	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
$\triangle V_{GS(th)}$	$V_{GS(th)}$ 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

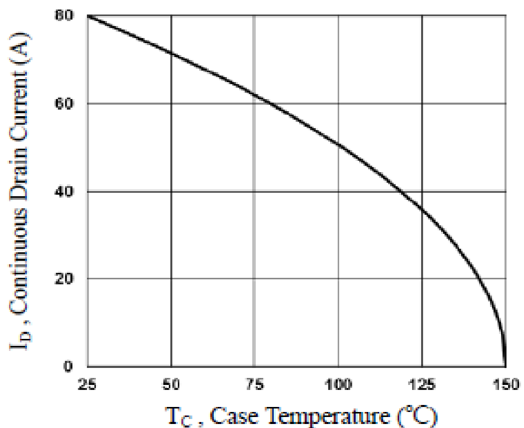


Fig.1 Continuous Drain Current vs. T_C

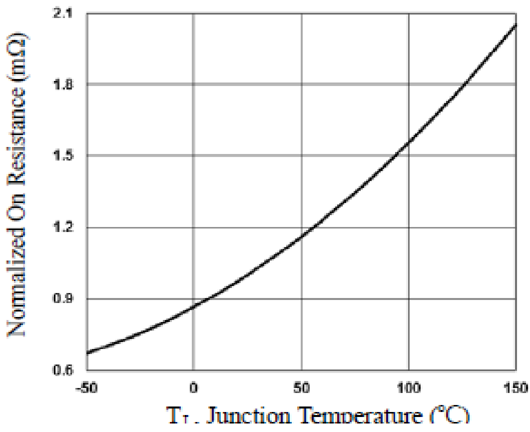


Fig.2 Normalized RDSON vs. T_J

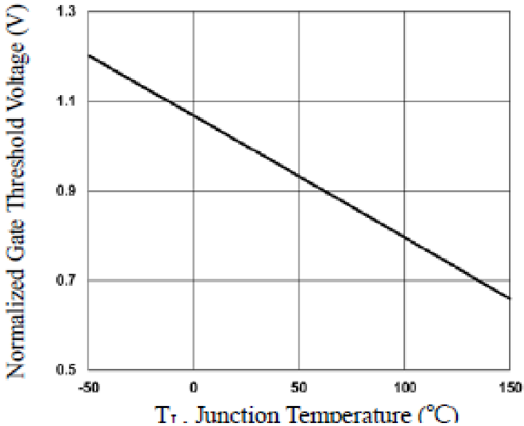


Fig.3 Normalized Vth vs. T_J

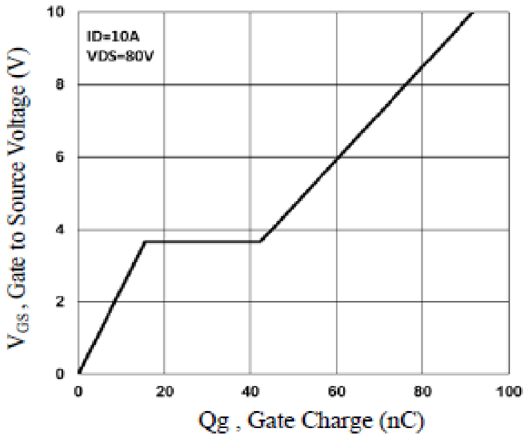


Fig.4 Gate Charge Characteristics

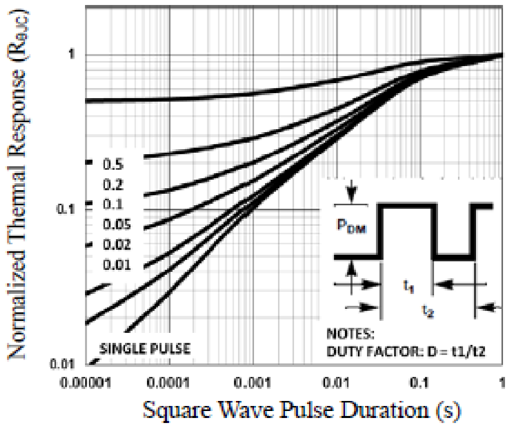


Fig.5 Normalized Transient Impedance

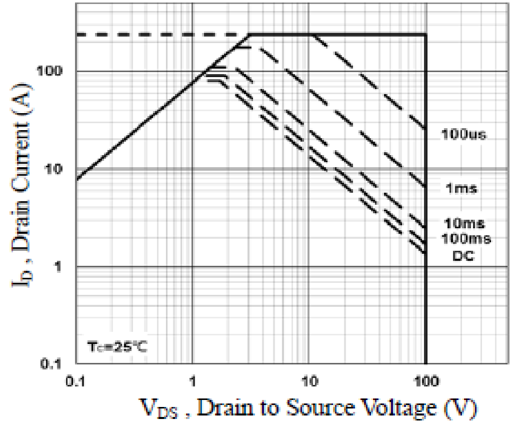


Fig.6 Maximum Safe Operation Area

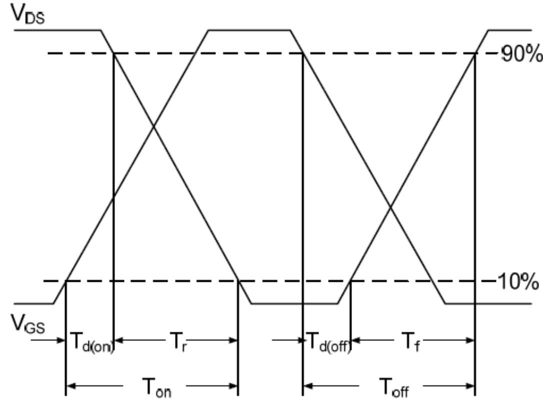


Fig.7 Switching Time Waveform

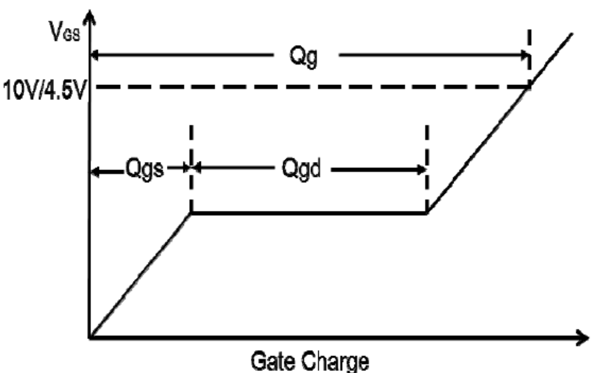
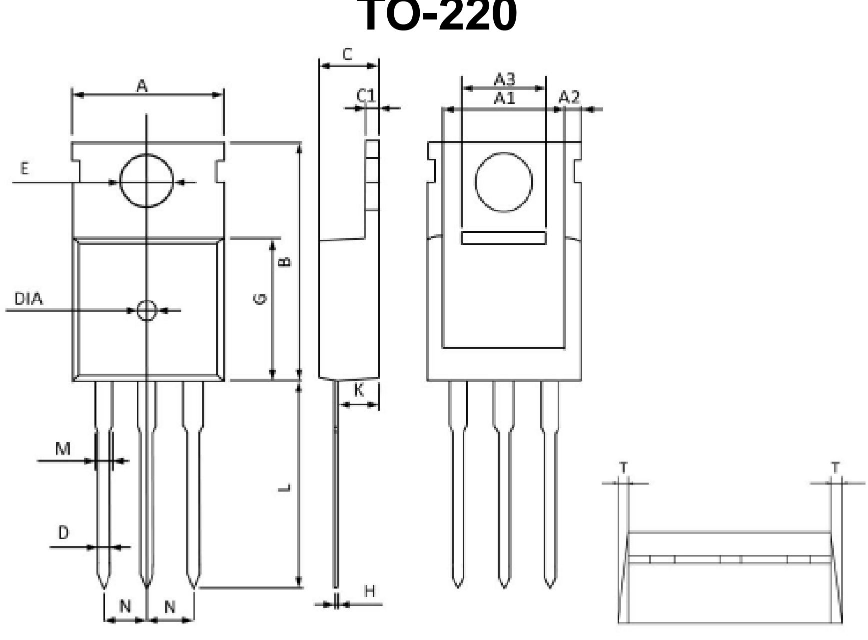


Fig.8 Gate Charge Waveform

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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