

GSM501DEA

600V N-Channel Enhancement Mode MOSFET

Product Description

GSM501DEA is an N-channel depletion-mode Power MOSFET which is produced using VDMOS technology.

The improved planar stripe cell have been especially tailored to minimize on-state resistance, provide superior switching performance.

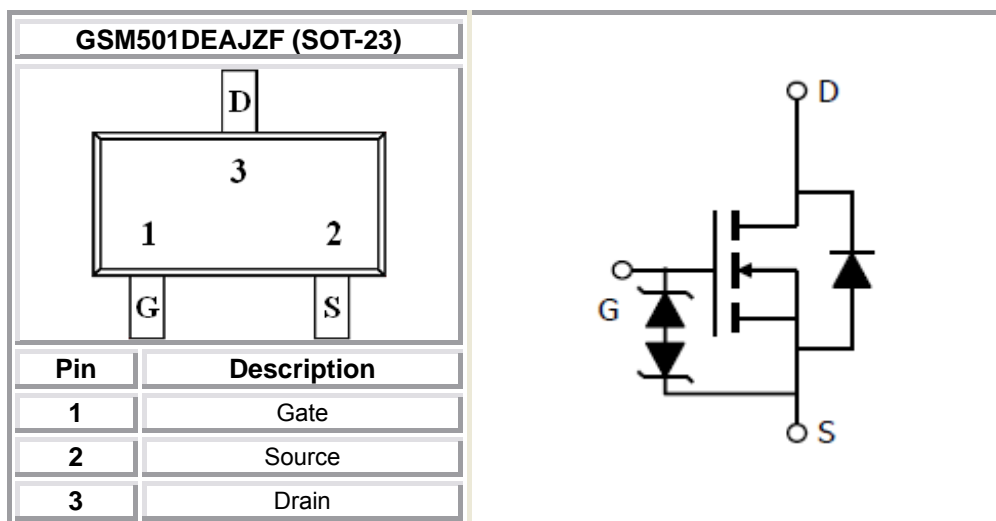
Features

- 600V/16mA, $R_{DS(ON)}=700\Omega@V_{GS}=10V$
- 600V/3mA, $R_{DS(ON)}=700\Omega@V_{GS}=4.5V$
- Depletion-mode (Normally-on)
- Improved ESD ability Fast switching
- Improved dv/dt capability
- SOT-23 package design

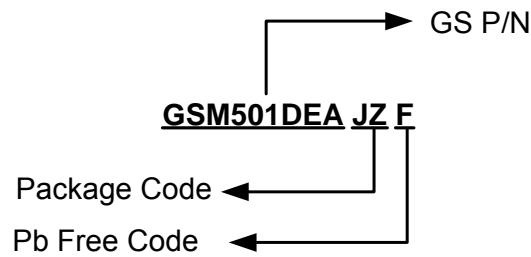
Applications

- Desk PC Power Supply
- AC adapter
- LCD TC Power Supply

Packages & Pin Assignments

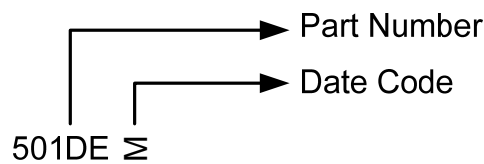


Ordering Information



Part Number	Package	Quantity Reel
GSM501DEAJZF	SOT-23	3000 PCS

Marking Information



Absolute Maximum Ratings

($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Typical	Unit	
V_{DSS}	Drain-Source Voltage	600	V	
V_{GSS}	Gate –Source Voltage	± 20	V	
I_D	Continuous Drain Current($T_J=150^{\circ}\text{C}$)	$T_A=25^{\circ}\text{C}$	30	mA
		$T_A=70^{\circ}\text{C}$	27	
I_{DM}	Pulsed Drain Current	120	mA	
I_S	Continuous Source Current(Diode Conduction)	30	mA	
P_D	Power Dissipation	$T_A=25^{\circ}\text{C}$	0.5	W
	Power Dissipation Derate	$T_A=25^{\circ}\text{C}$	0.004	W/ $^{\circ}\text{C}$
T_J	Operating Junction Temperature	-55/150	$^{\circ}\text{C}$	
T_{STG}	Storage Temperature Range	-55/150	$^{\circ}\text{C}$	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	50	$^{\circ}\text{C}/\text{W}$	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	250	$^{\circ}\text{C}/\text{W}$	

Electrical Characteristics

(T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =-5V, I _D =250μA	600			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =3V, I _D =8μA	1.0		2.7	
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±10	μA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =0V, V _{GS} =25V	12			mA
I _{D(off)}	On-State Drain Current	V _{DS} =600V, V _{GS} =-5V			0.1	μA
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =16mA		310	700	Ω
		V _{GS} =0V, I _D =3mA		330	700	
V _{SD}	Diode Forward Voltage	I _S =16mA, V _{GS} =-5V		0.85	1.2	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =-5V, f=1MHz			99	pF
C _{oss}	Output Capacitance				9.1	
C _{rss}	Reverse Transfer Capacitance				5	
Q _g	Total Gate Charge	V _{DS} =400V, V _{GS} =-5 to 5V, I _D =0.01A (Note 1,2)			1.8	nC
Q _{gs}	Gate-Source Charge				0.75	
Q _{gd}	Gate-Drain Charge				0.56	
t _{d(on)}	Turn-On Time	V _{DD} =300V, I _D =0.01A, V _{GEN} =-5..7V, R _G =6Ω (Note 1,2)			18	ns
t _r					90	
t _{d(off)}	Turn-Off Time				93	
t _f					210	

Notes:

1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
2. Essentially independent of operating temperature

Typical Performance Characteristics

Figure 1. On-Region Characteristics

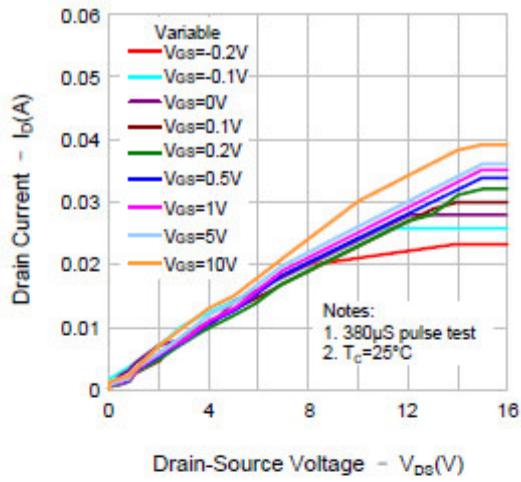


Figure 2. Transfer Characteristics

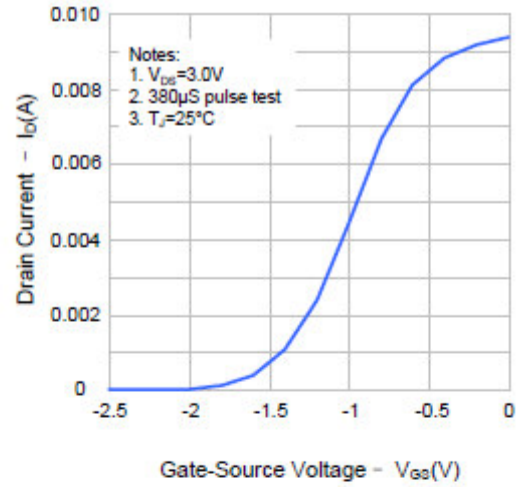


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

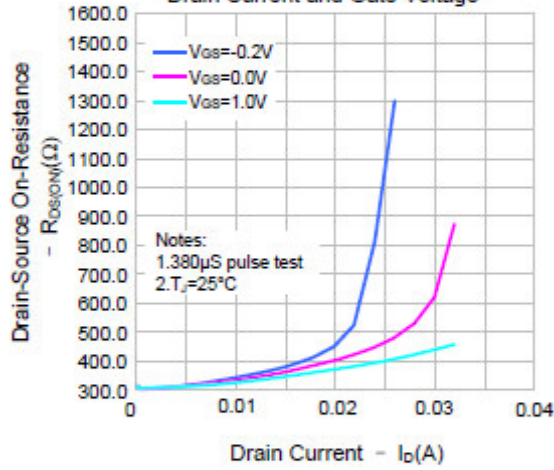


Figure 4. Forward characteristics of reverse diode

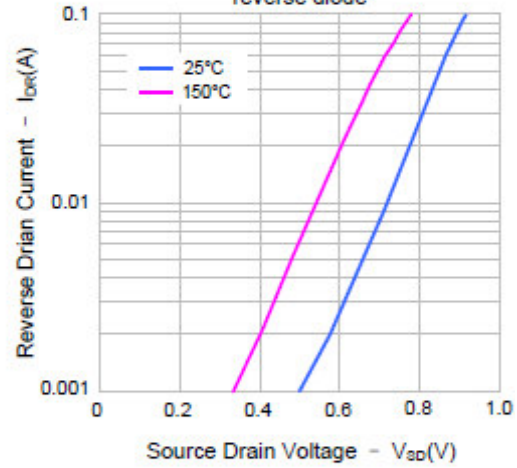


Figure 5. Breakdown Voltage Variation vs. Temperature

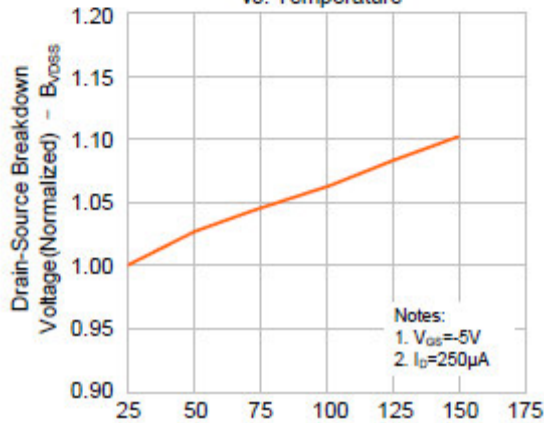
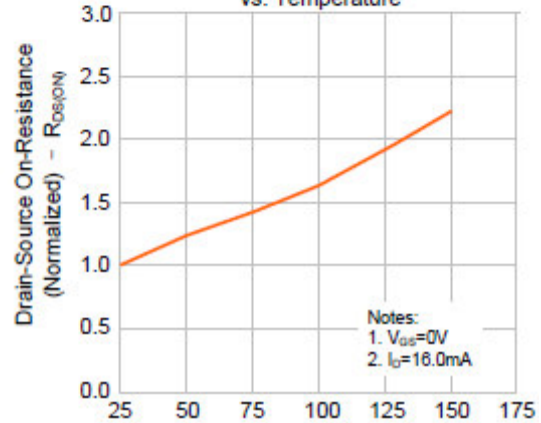
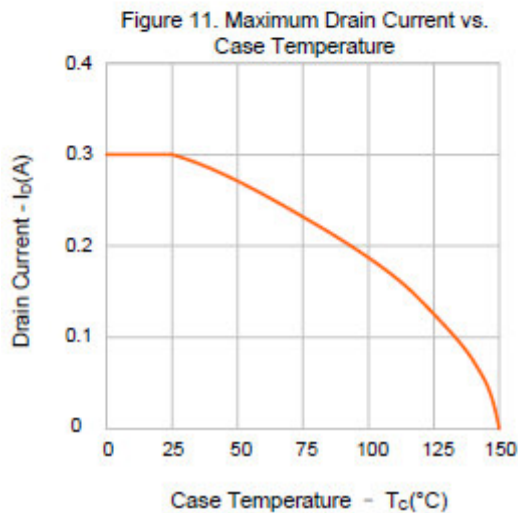
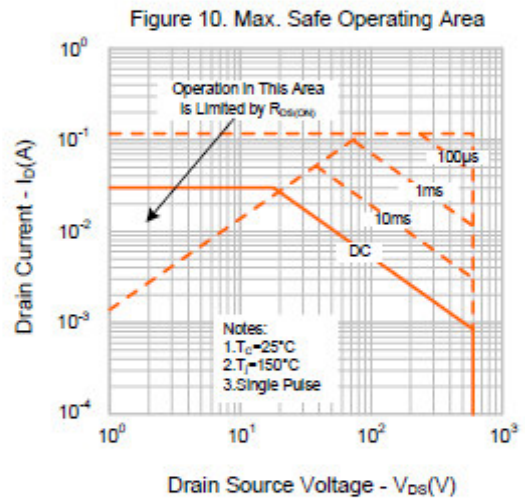
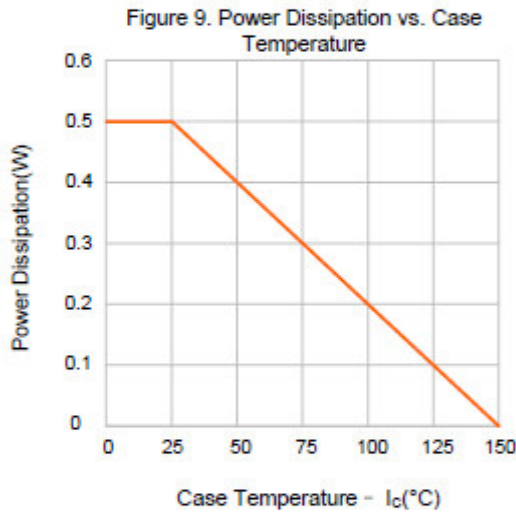
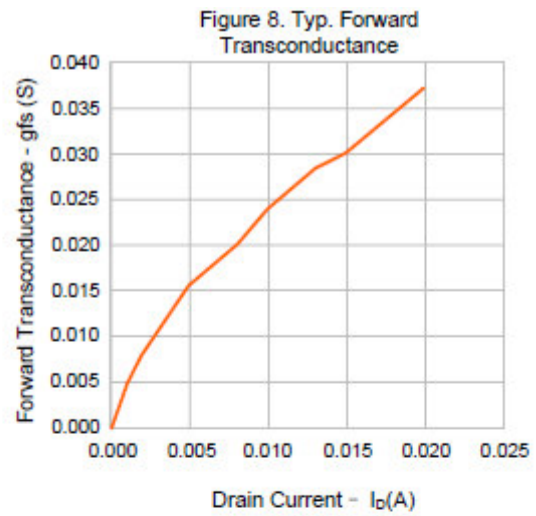
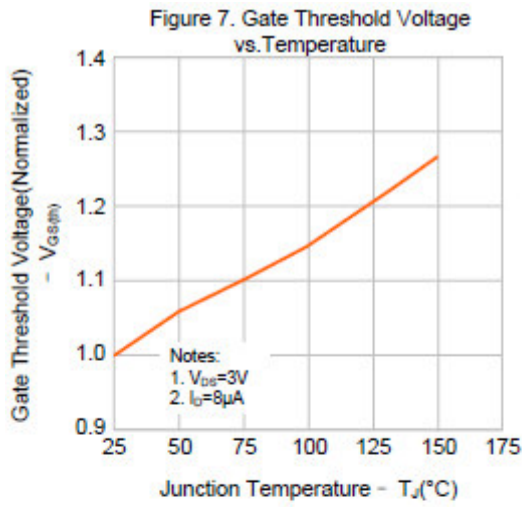


Figure 6. On-resistance Variation vs. Temperature

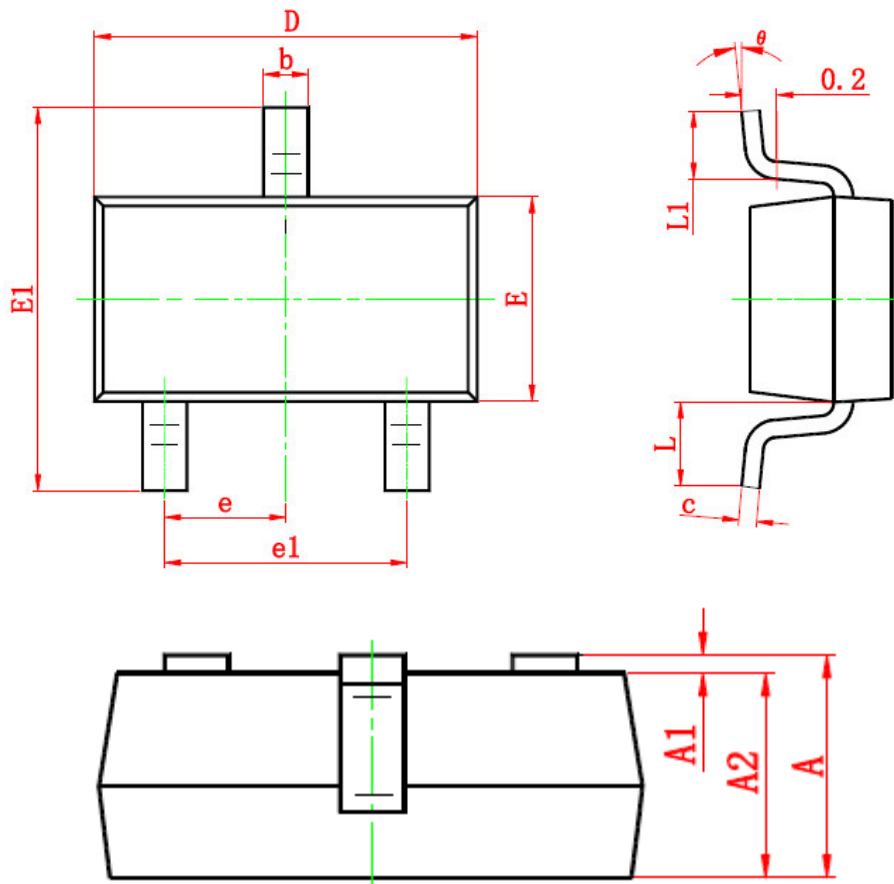


Typical Performance Characteristics (continue)



Package Dimension

SOT-23 PLASTIC PACKAGE











Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.90	1.20	0.035	0.043
A1	0.00	0.10	0.000	0.004
A2	0.90	1.10	0.035	0.039
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950 (TYP)		0.037 (TYP)	
e1	1.80	2.00	0.071	0.079
L	0.550 (REF)		0.022 (REF)	
L1	0.30	0.50	0.012	0.020
Q	0°	8°	0°	8°



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CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

Wu-Xi Branch	
	No.21 Changjiang Rd., WND, Wuxi, Jiangsu, China (INFO. &. TECH. Science Park Building A 210 Room)
	86-510-85217051
	86-510-85211238
	sales_cn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587