

GSM7002K

60V N-Channel Enhancement Mode MOSFET

Product Description

GSM7002K, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

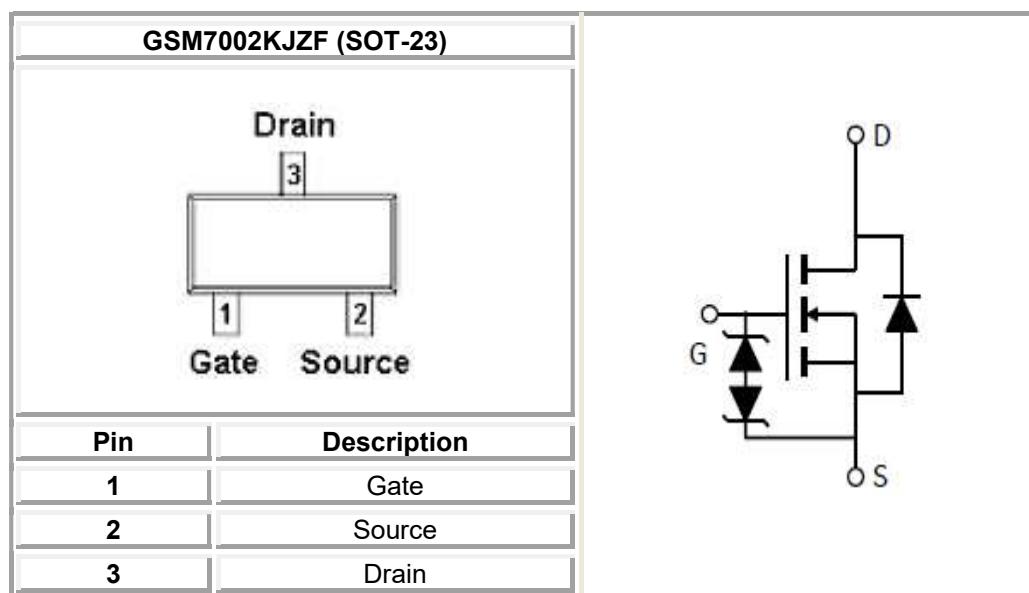
Features

- 60V/0.5A , $R_{DS(ON)}=2.4\Omega @ V_{GS}=10V$
- 60V/0.3A , $R_{DS(ON)}=3.0\Omega @ V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD Protection (2KV) Diode design-in
- SOT-23 package design

Applications

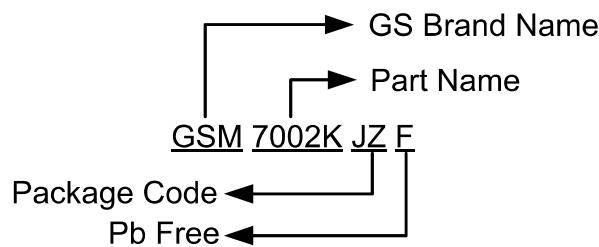
- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- High saturation current capability.
- Direct Logic-Level Interface: TTL/CMOS
- Battery Operated Systems
- Solid-State Relays

Packages & Pin Assignments

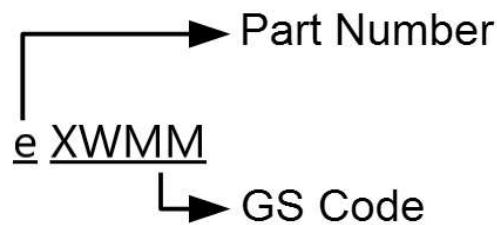


GSM7002K

Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM7002KJZF	SOT-23	eXWMM	3000 PCS

Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	60	V
V _{GSS}	Gate-Source Voltage - Continuous	±20	V
I _D	Continuous Drain Current	0.3	A
		0.22	
I _{DM}	Pulsed Drain Current	0.65	A
I _S	Continuous Source Current(Diode Conduction)	0.45	A
P _D	Power Dissipation	0.35	W
		0.23	
T _J	Operating Junction Temperature	-55/150	°C
T _{STG}	Storage Temperature Range	-55/150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	357	°C/W

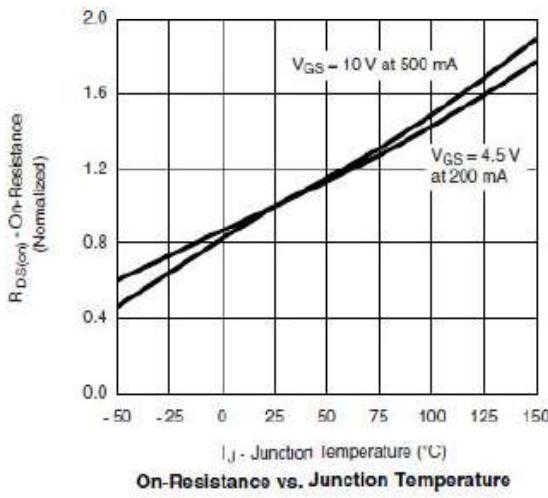
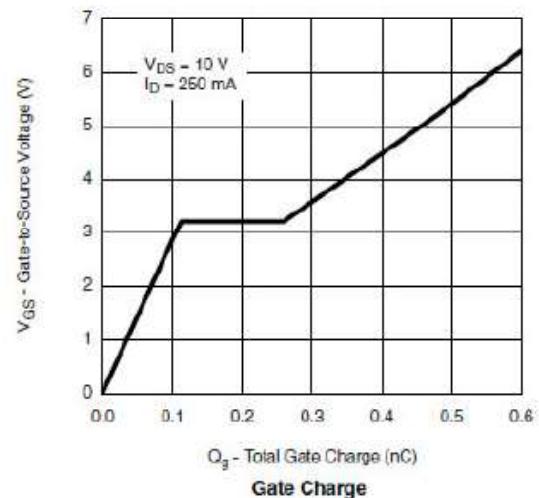
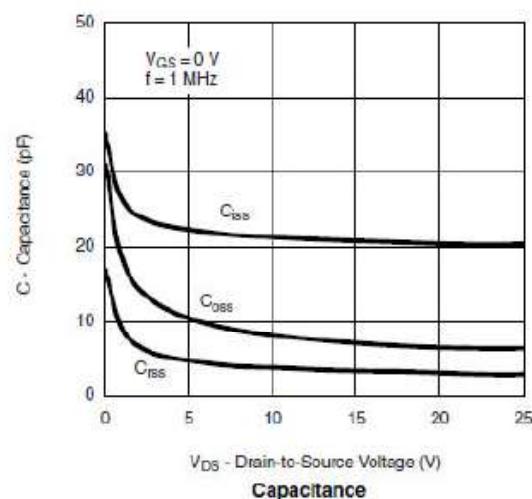
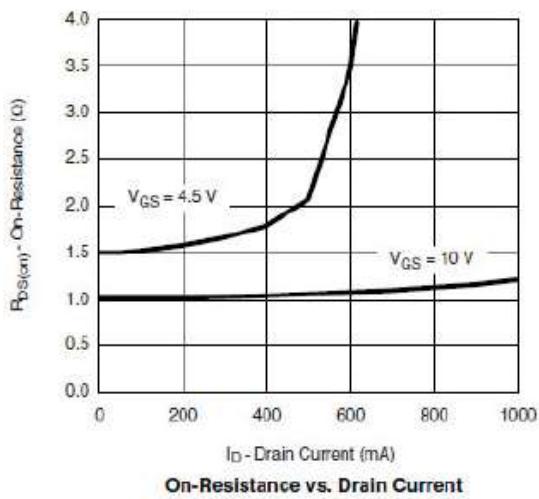
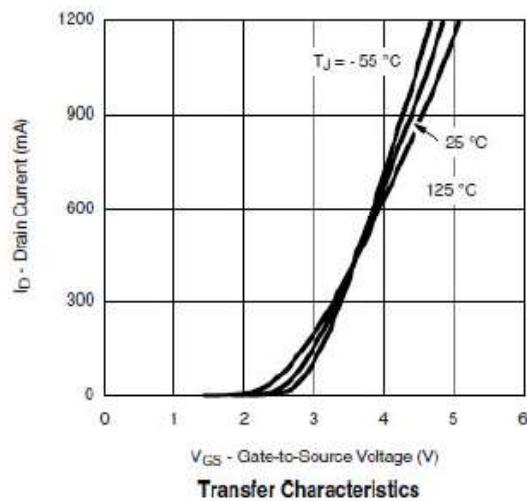
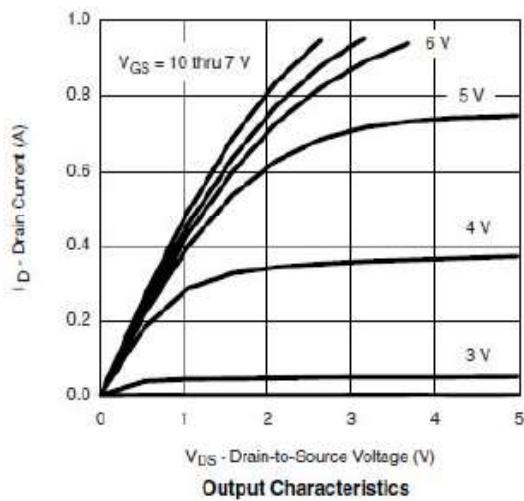
GSM7002K

Electrical Characteristics

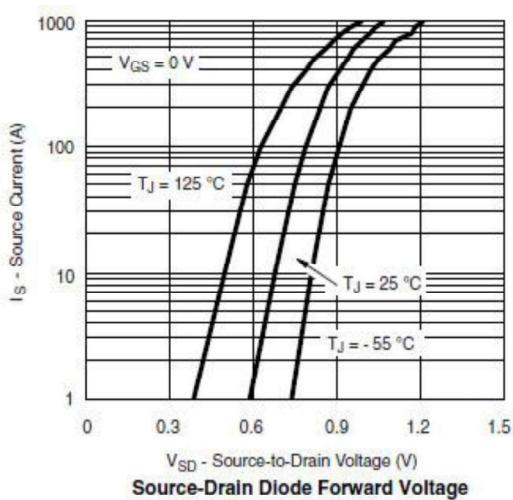
$T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
Static							
$V_{(\text{BR})\text{DSS}}$	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	60			V	
$V_{\text{GS}(\text{th})}$	Gate Threshold Voltage	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	1.0		2.0		
I_{GSS}	Gate Leakage Current	$V_{\text{DS}}=0\text{V}, V_{\text{GS}}=\pm 20\text{V}$		3		μA	
I_{DSS}	Zero Gate Voltage Drain Current	$V_{\text{DS}}=60\text{V}, V_{\text{GS}}=0\text{V}$		1			
		$V_{\text{DS}}=60\text{V}, V_{\text{GS}}=0\text{V}, T_J=85^\circ\text{C}$		10		μA	
$R_{\text{DS}(\text{on})}$	Drain-Source On-Resistance	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=0.5\text{A}$		1.2	2.4	Ω	
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=0.3\text{A}$		1.6	3.0		
g_{FS}	Forward Transconductance	$V_{\text{DS}}=10\text{V}, I_{\text{D}}=0.2\text{A}$		0.2		S	
V_{SD}	Diode Forward Voltage	$V_{\text{GS}}=0\text{V}, I_{\text{S}}=0.2\text{A}$		0.75	1.4	V	
Dynamic							
Q_g	Total Gate Charge	$V_{\text{DD}}=10\text{V}, I_{\text{D}}=0.25\text{A}, V_{\text{GS}}=4.5\text{V}$		500			
Q_{gs}	Gate-Source Charge			100		pC	
Q_{gd}	Gate-Drain Charge			150			
C_{iss}	Input Capacitance	$V_{\text{DS}}=25\text{V}, f=1\text{MHz}, V_{\text{GS}}=0\text{V}$		30			
C_{oss}	Output Capacitance			8		pF	
C_{rss}	Reverse Transfer Capacitance			5			
$t_{\text{d}(\text{on})}$	Turn-On Time	$V_{\text{DD}}=30\text{V}, I_{\text{D}}=0.2\text{A}, R_{\text{G}}=10\Omega, V_{\text{GEN}}=4.5\text{V}, R_{\text{L}}=150\Omega$		10	20		
t_r				35	50		
$t_{\text{d}(\text{off})}$	Turn-Off Time			20	30	ns	
t_f				40	60		

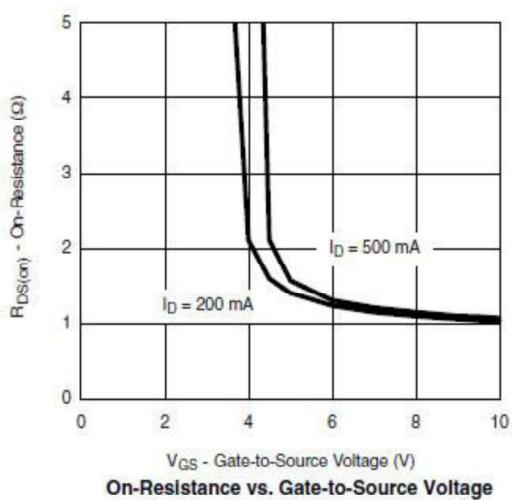
Typical Performance Characteristics



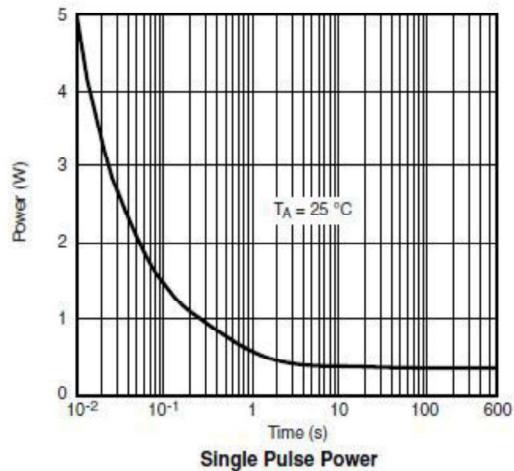
Typical Performance Characteristics (Continue)



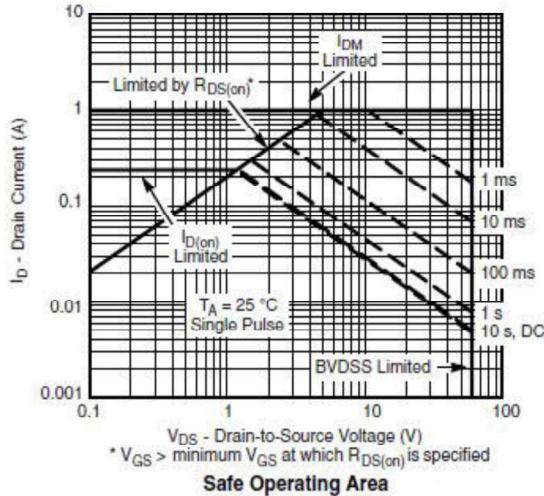
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

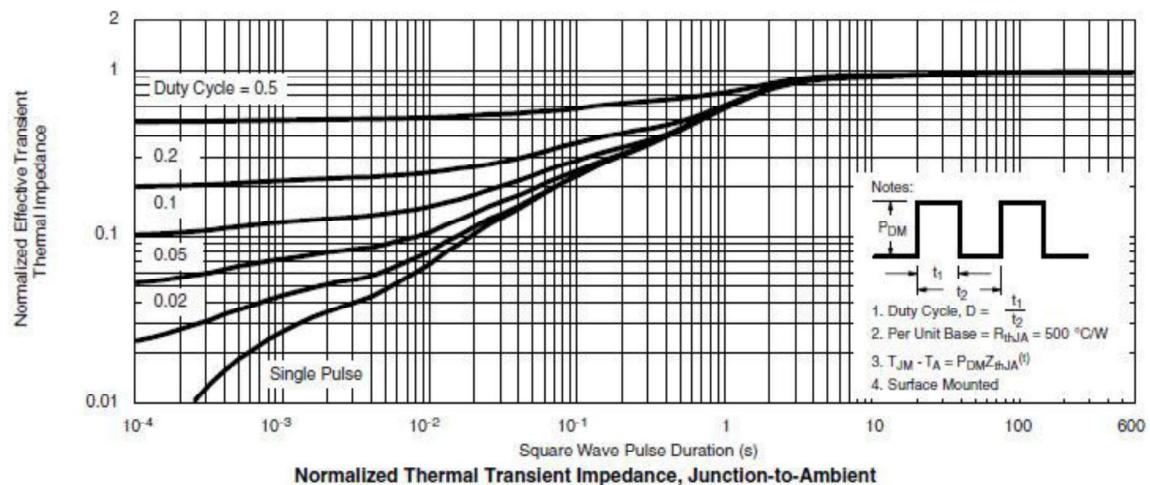


Single Pulse Power



* $V_{GS} > \text{minimum } V_{GS}$ at which $R_{DS(on)}$ is specified

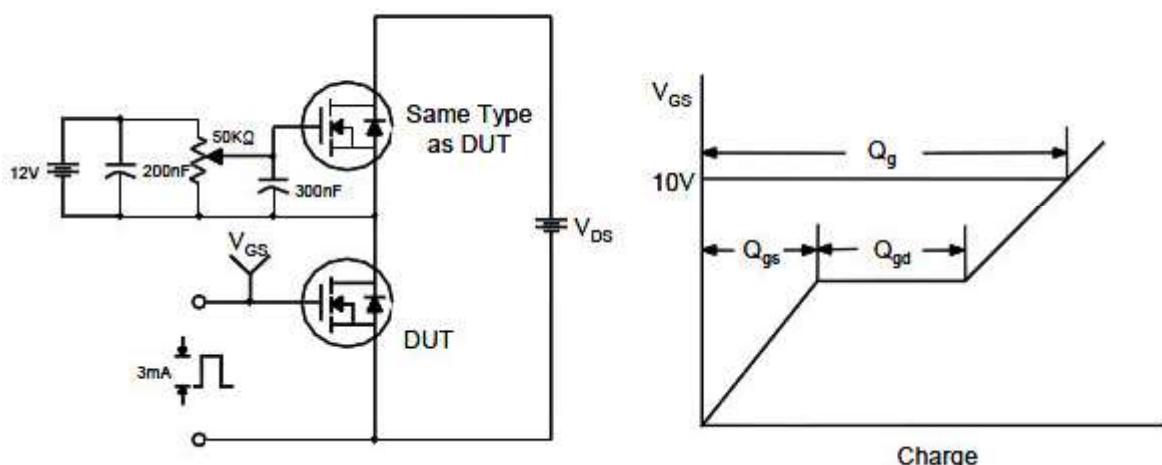
Safe Operating Area



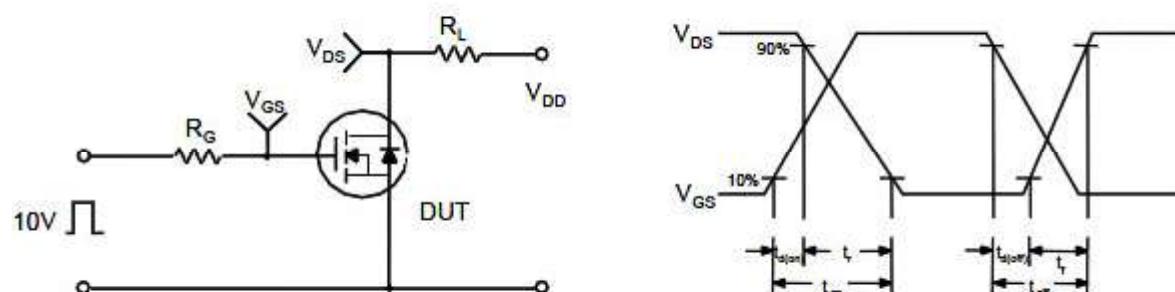
Normalized Thermal Transient Impedance, Junction-to-Ambient

Typical Characteristics

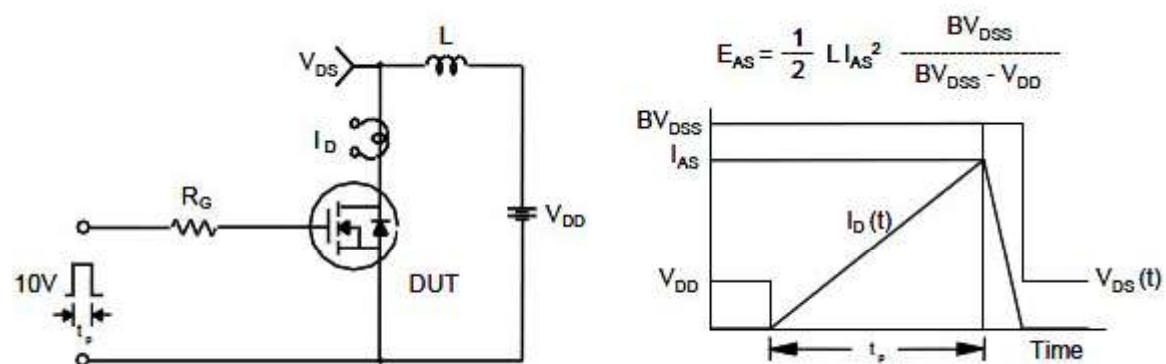
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

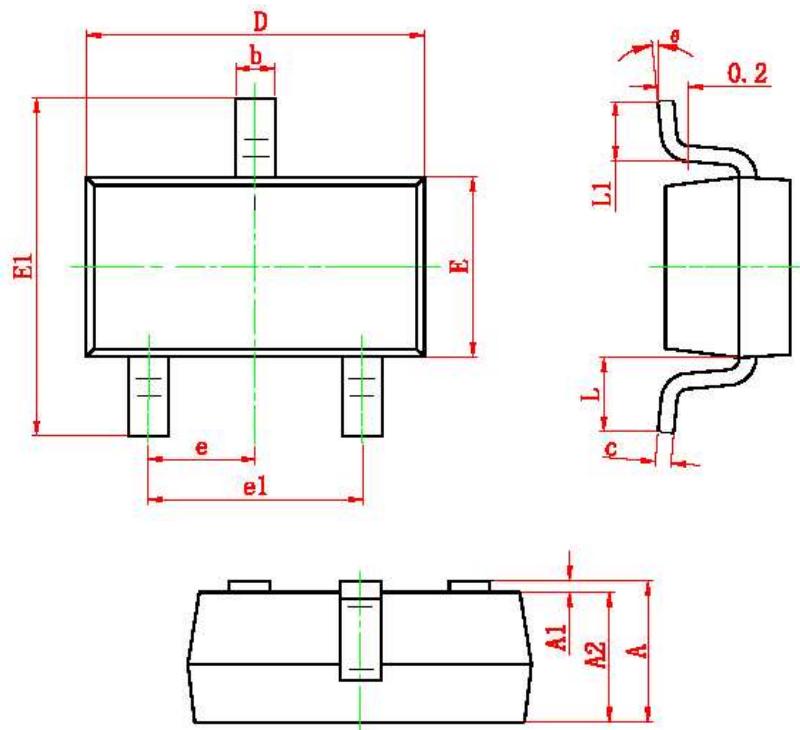


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-23



Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

GSM7002K

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