

# 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.

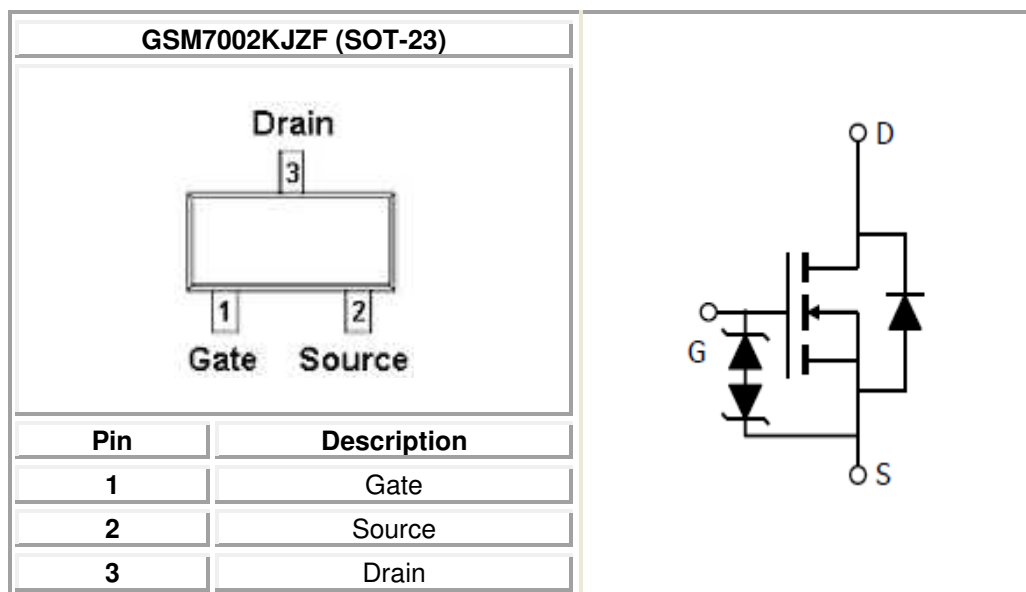
### Features

- 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

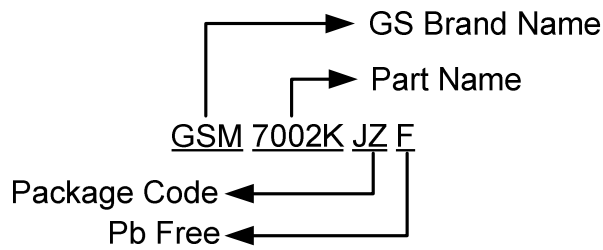
### Applications

- 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

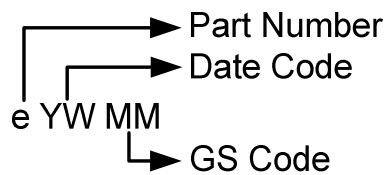
### Packages & Pin Assignments



## Ordering Information



## Marking Information



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

## Absolute Maximum Ratings

T<sub>A</sub>=25°C Unless otherwise noted

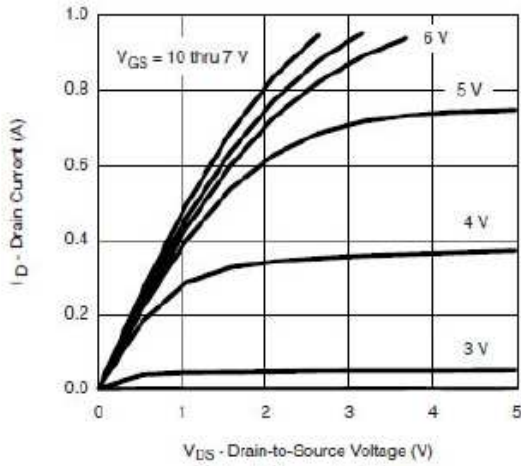
Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	60	V
V <sub>GSS</sub>	Gate-Source Voltage - Continuous	±20	V
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	0.5
		T <sub>A</sub> =70°C	0.3
I <sub>DM</sub>	Pulsed Drain Current (*)	0.65	A
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	0.45	A
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	1.25
		T <sub>A</sub> =70°C	0.8
T <sub>J</sub>	Operating Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	120	°C/W

## Electrical Characteristics

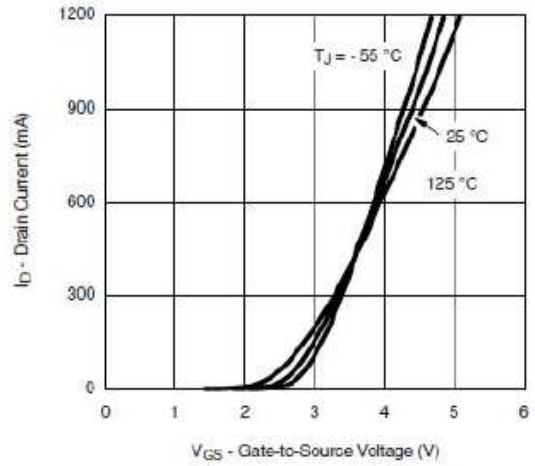
T<sub>A</sub>=25°C unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0		2.0	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			3	μA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V			1	μA
		V <sub>DS</sub> =60V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C			10	
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A		1.2	2.4	Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.3A		1.6	3.0	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =0.2A		0.2		S
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =0.2A		0.75	1.4	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DD</sub> =10V, I <sub>D</sub> =0.25A, V <sub>GS</sub> =4.5V		500		pC
Q <sub>gs</sub>	Gate-Source Charge			100		
Q <sub>gd</sub>	Gate-Drain Charge			150		
C <sub>iSS</sub>	Input Capacitance	V <sub>DS</sub> =25V, f=1MHz, V <sub>GS</sub> =0V		30		pF
C <sub>oss</sub>	Output Capacitance			8		
C <sub>rSS</sub>	Reverse Transfer Capacitance			5		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =30V, I <sub>D</sub> =0.2A, R <sub>G</sub> =10Ω, V <sub>GEN</sub> =4.5V, R <sub>L</sub> =150Ω		10	20	ns
t <sub>r</sub>				35	50	
t <sub>d(off)</sub>	Turn-Off Time			20	30	
t <sub>f</sub>				40	60	

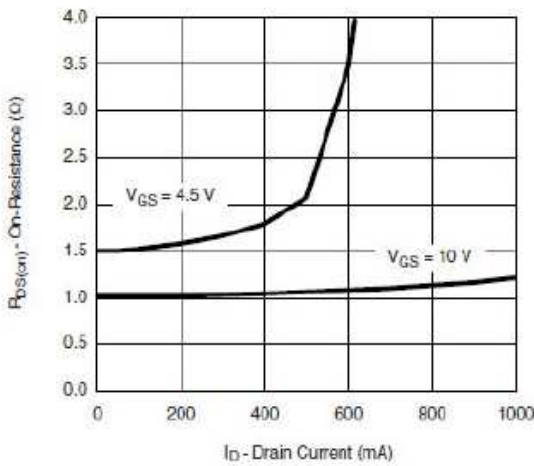
## Typical Performance Characteristics



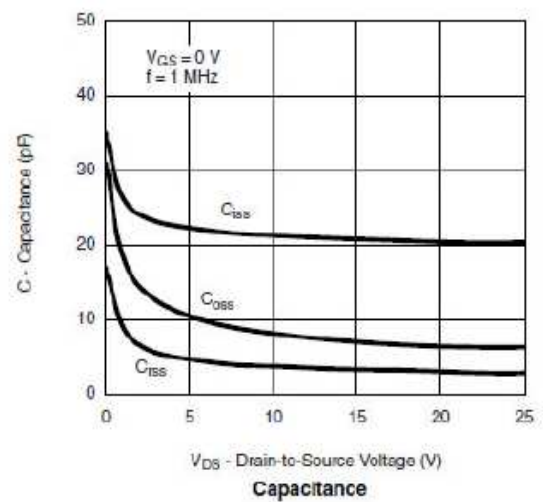
Output Characteristics



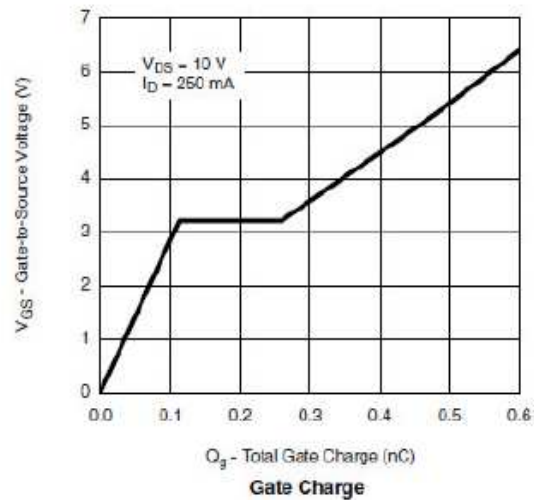
Transfer Characteristics



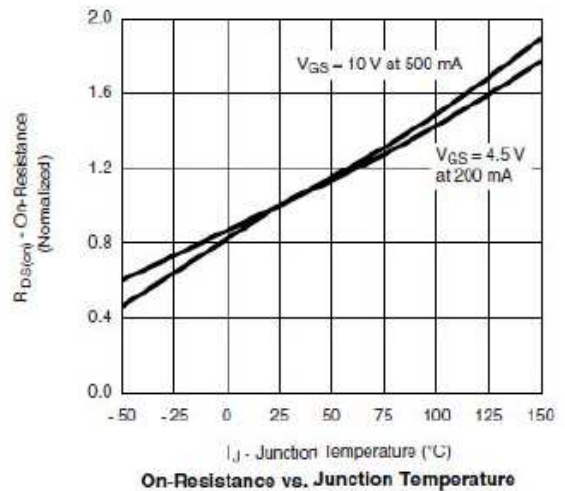
On-Resistance vs. Drain Current



Capacitance

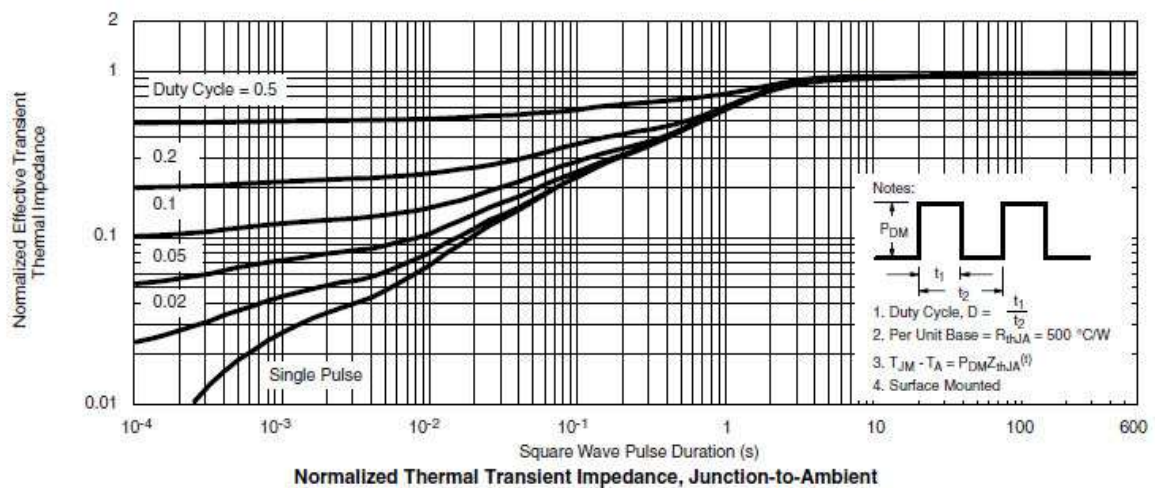
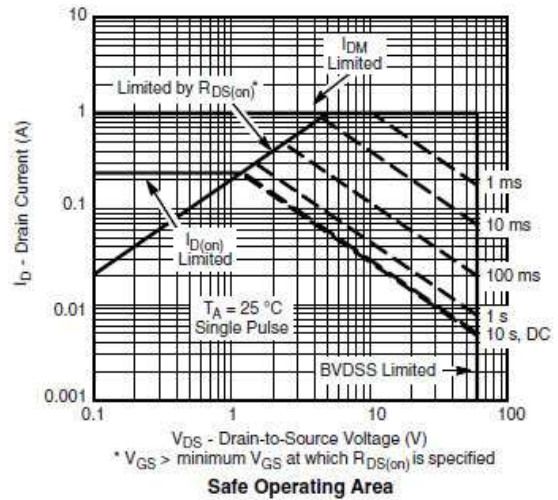
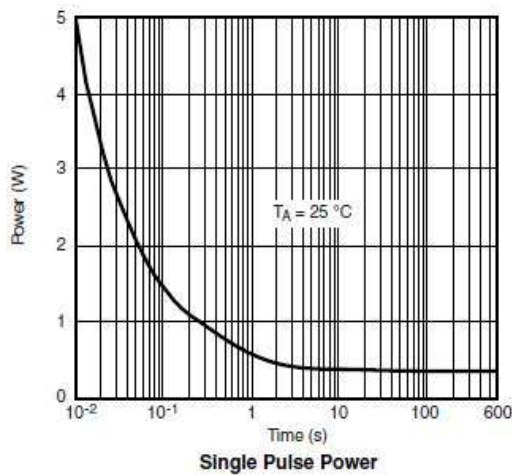
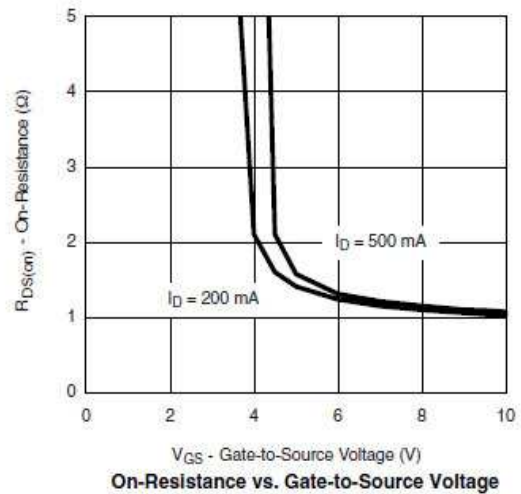
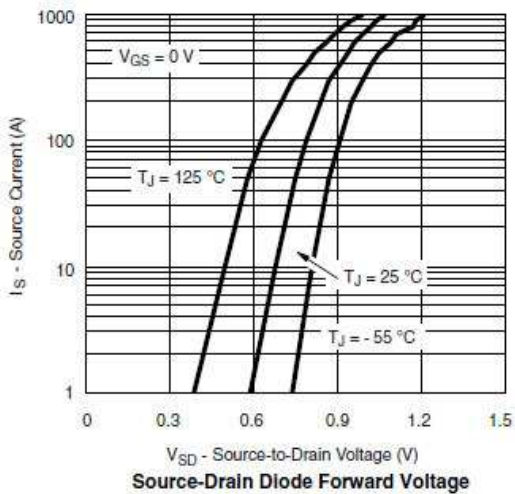


Gate Charge



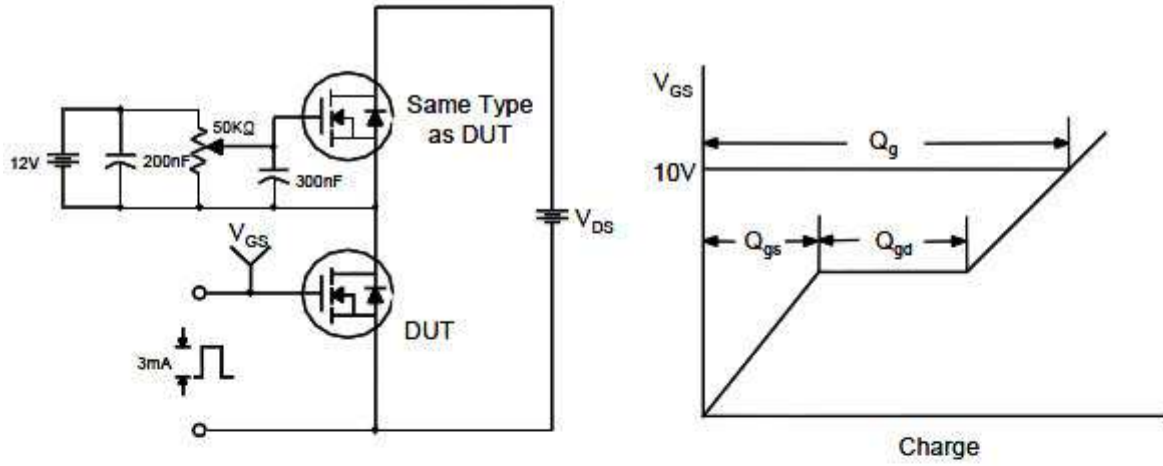
On-Resistance vs. Junction Temperature

## Typical Performance Characteristics (Continue)

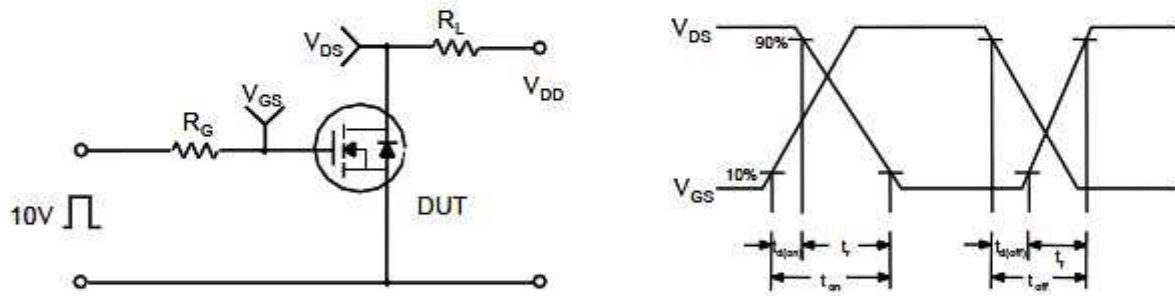


## Typical Characteristics

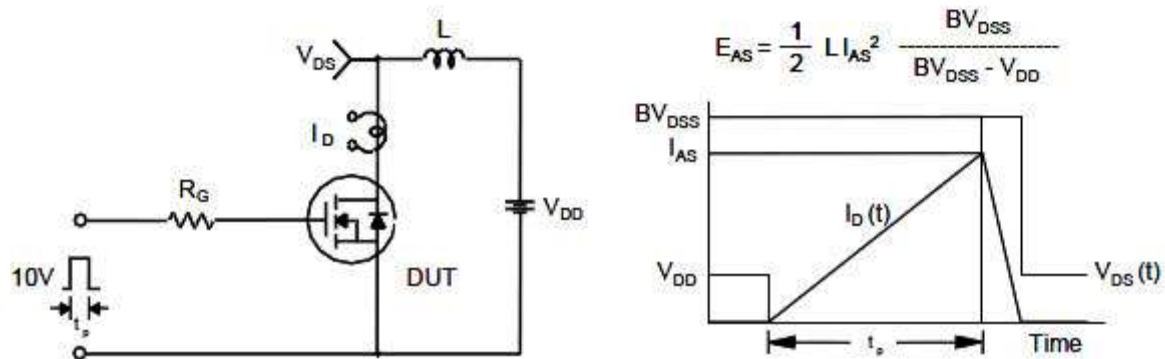
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

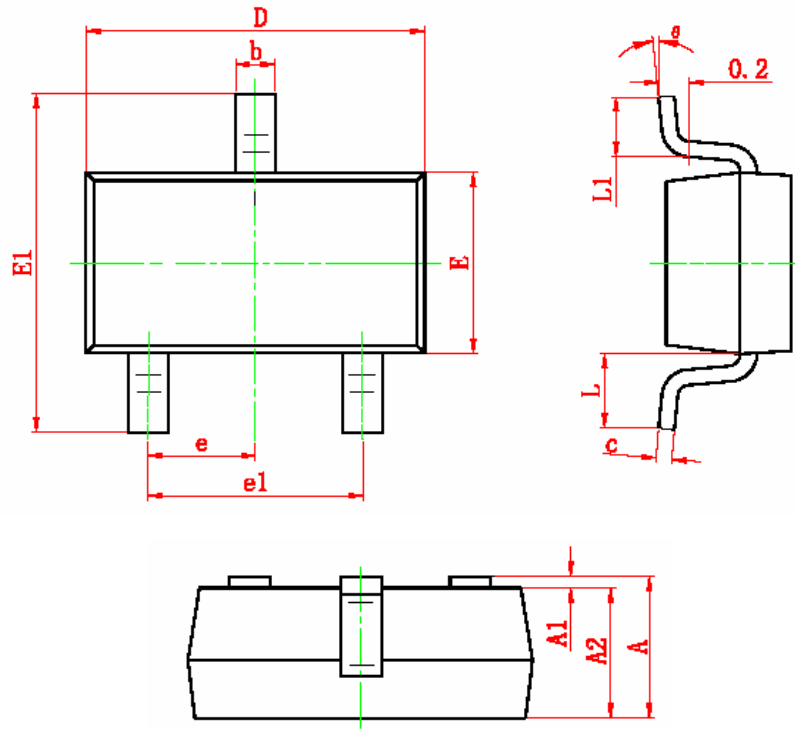


Unclamped Inductive Switching Test Circuit & Waveforms



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
$\theta$	0°	8°	0°	8°

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