

GSM3414S

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM3414S, 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.

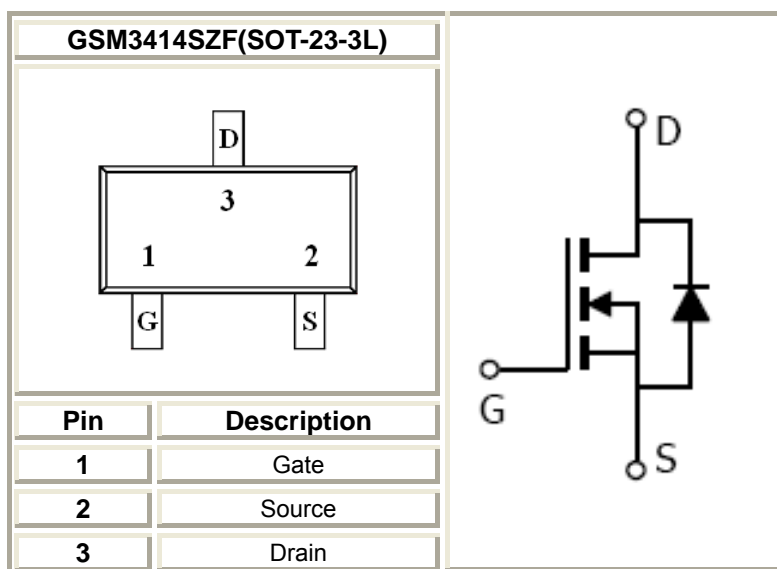
Features

- 20V/4.0A, $R_{DS(ON)}=50m\Omega@V_{GS}=4.5V$
- 20V/3.4A, $R_{DS(ON)}=60m\Omega@V_{GS}=2.5V$
- 20V/2.8A, $R_{DS(ON)}=105m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

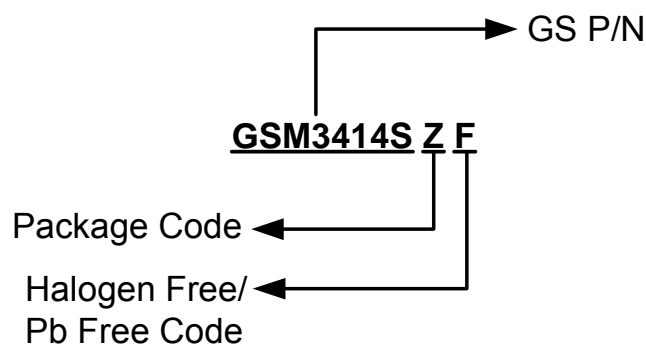
Applications

- Portable Equipment
- Battery Powered System
- Net Working System

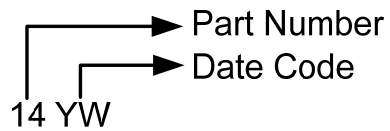
Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM3414SZF	SOT-23-3L	14YW	3000pcs

Absolute Maximum Ratings

T_A=25°C unless otherwise noted

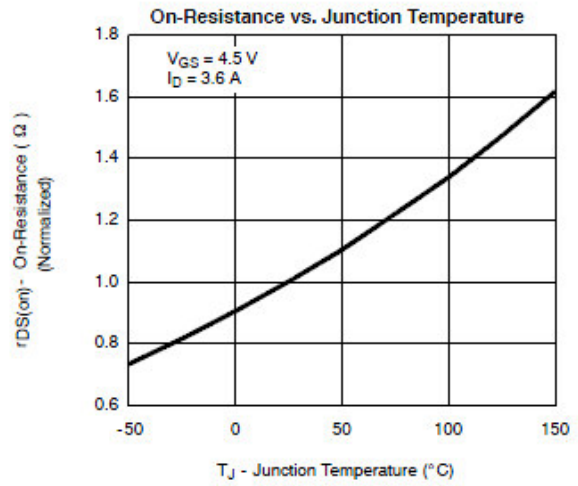
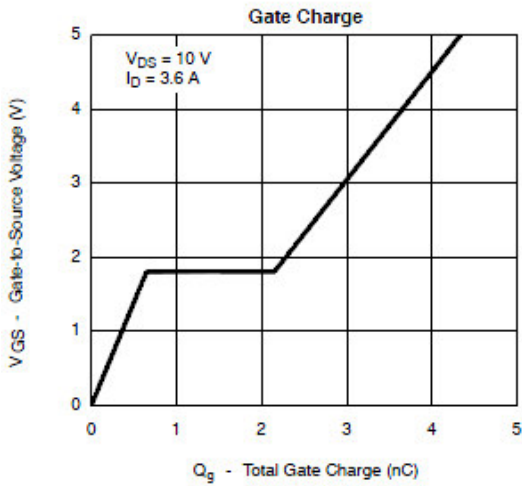
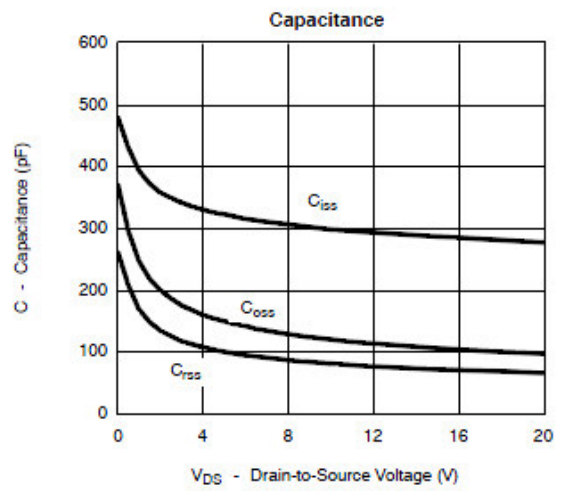
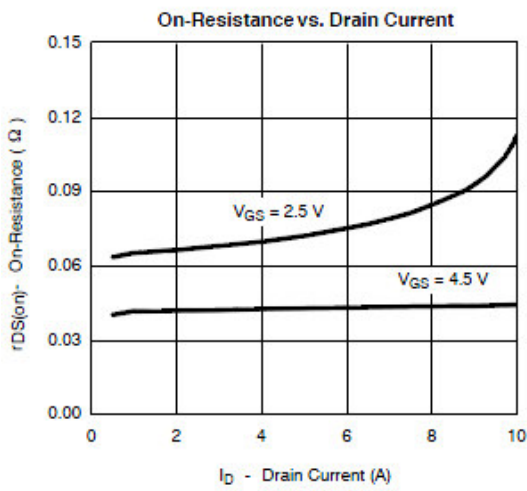
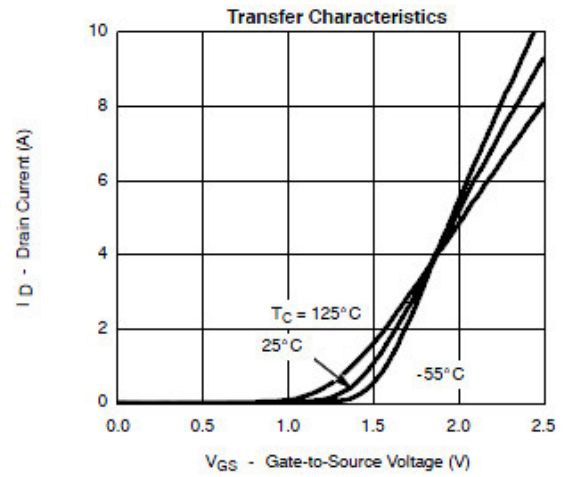
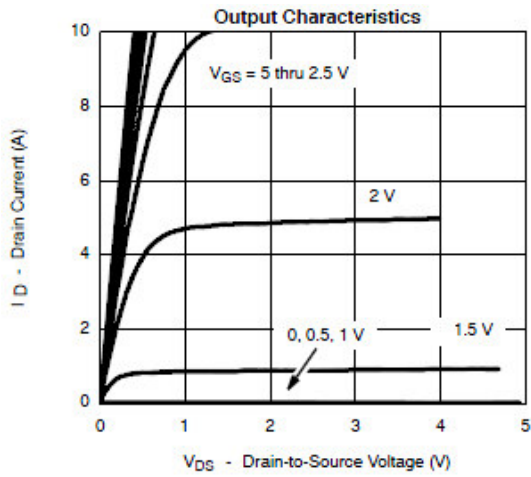
Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	20	V
V _{GSS}	Gate –Source Voltage	±12	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	4.0
		T _A =70°C	3.4
I _{DM}	Pulsed Drain Current	10	A
I _S	Continuous Source Current(Diode Conduction)	1.6	A
P _D	Power Dissipation	T _A =25°C	1.25
		T _A =70°C	0.8
T _J	Operating Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55/150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	120	°C/ W

Electrical Characteristics

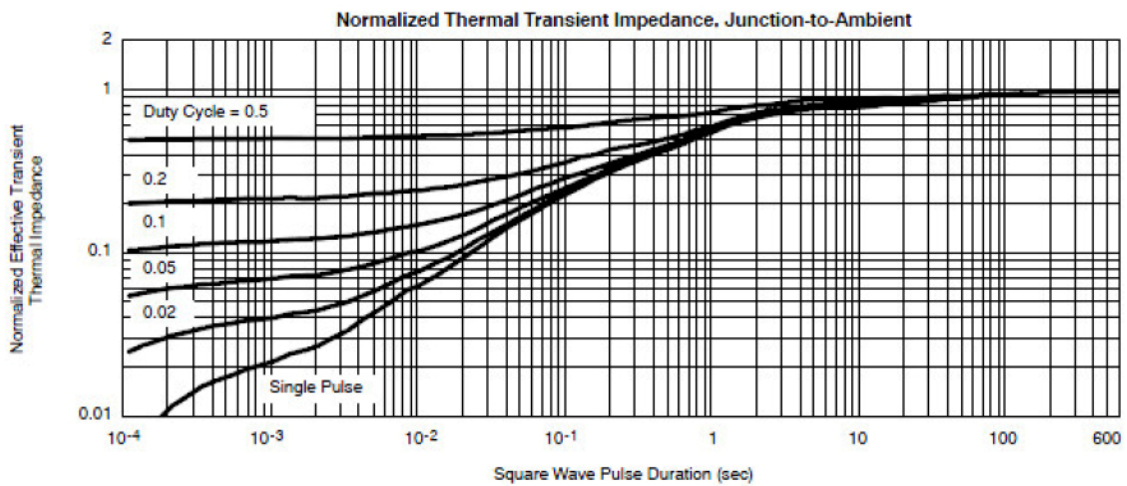
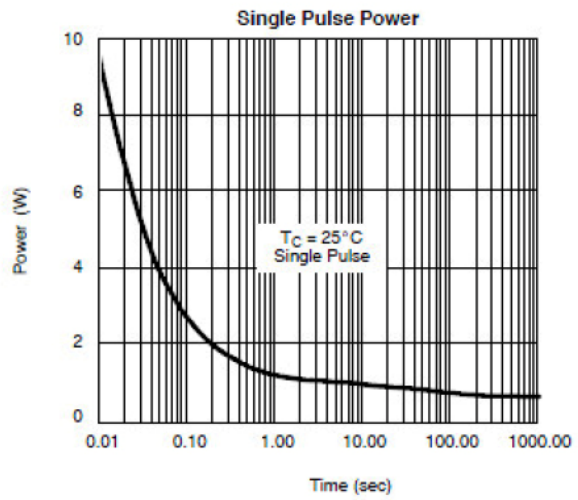
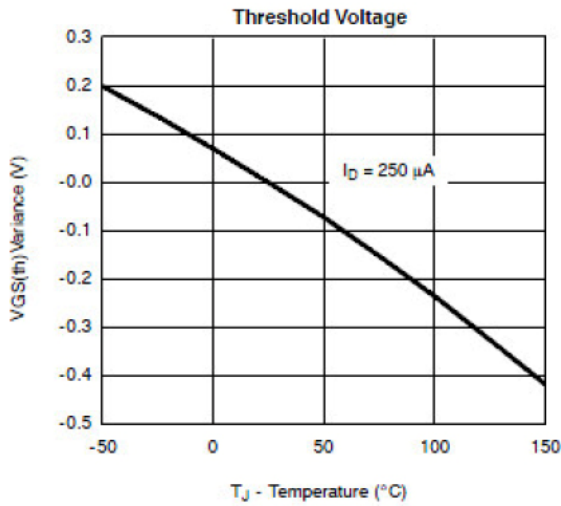
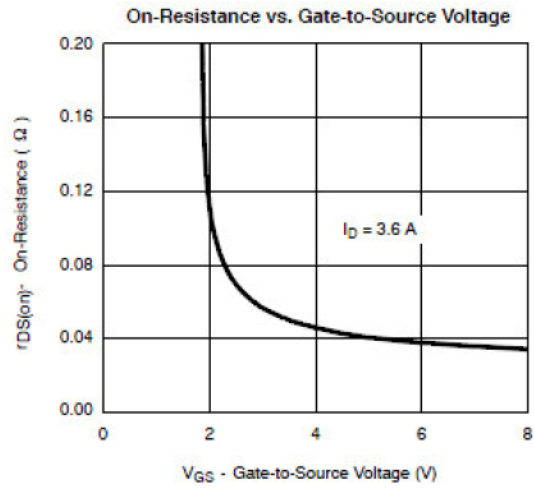
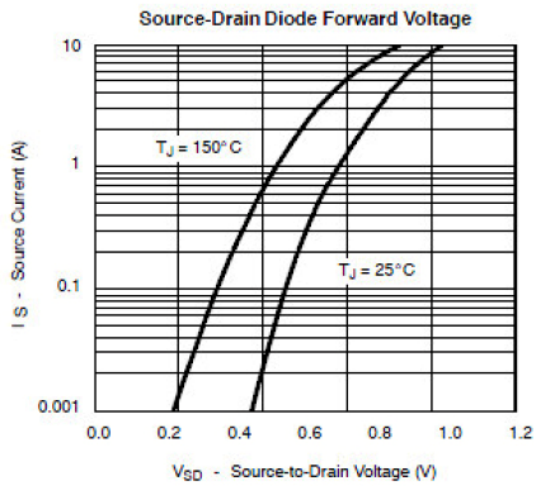
T_A=25°C unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.5		1.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V			1	μA
		V _{DS} =16V, V _{GS} =0V, T _J =85°C			10	
I _{D(on)}	On-State Drain Current	V _{DS} ≥5V, V _{GS} =4.5V	6			A
		V _{DS} ≥5V, V _{GS} =2.5V	4			
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =4.0A		40	50	mΩ
		V _{GS} =2.5V, I _D =3.4A		50	60	
		V _{GS} =1.8V, I _D =2.8A		80	105	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =3.6A		10		S
V _{SD}	Diode Forward Voltage	I _S =1.6A, V _{GS} =0V		0.85	1.2	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz		340		pF
C _{oss}	Output Capacitance			115		
C _{rss}	Reverse Transfer Capacitance			33		
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D ≅3.6A		5.4	10	nC
Q _{gs}	Gate-Source Charge			0.65		
Q _{gd}	Gate-Drain Charge			1.4		
t _{d(on)}	Turn-On Time	V _{DD} =10V, R _L =5.5Ω, I _D ≅3.6A, V _{GEN} =4.5V, R _G =6Ω		12	25	ns
T _r				36	60	
t _{d(off)}	Turn-Off Time			34	60	
T _f				10	25	

Typical Performance Characteristics

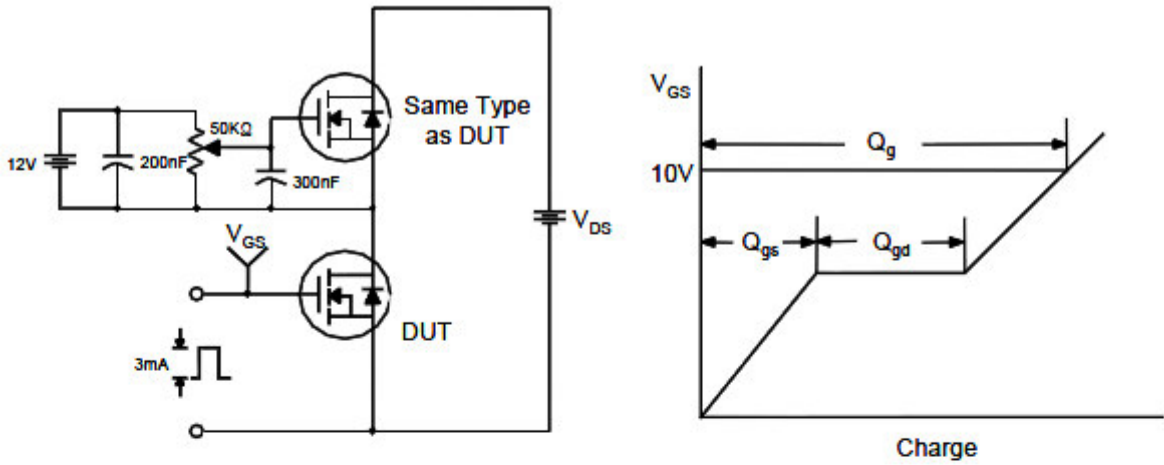


Typical Performance Characteristics (continue)

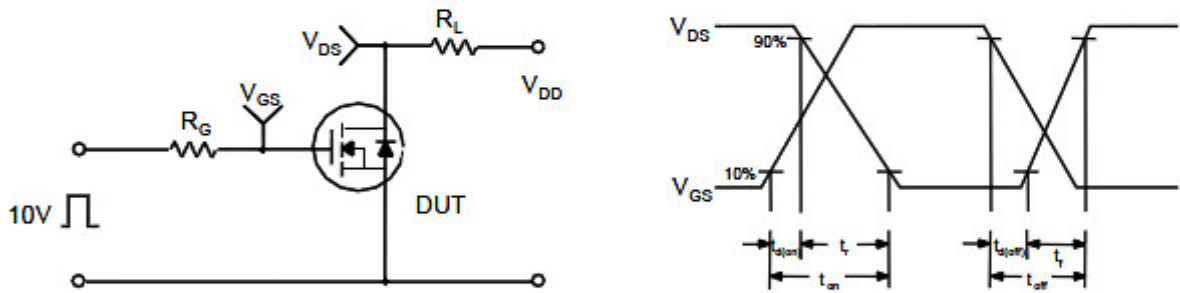


Typical Performance Characteristics (continue)

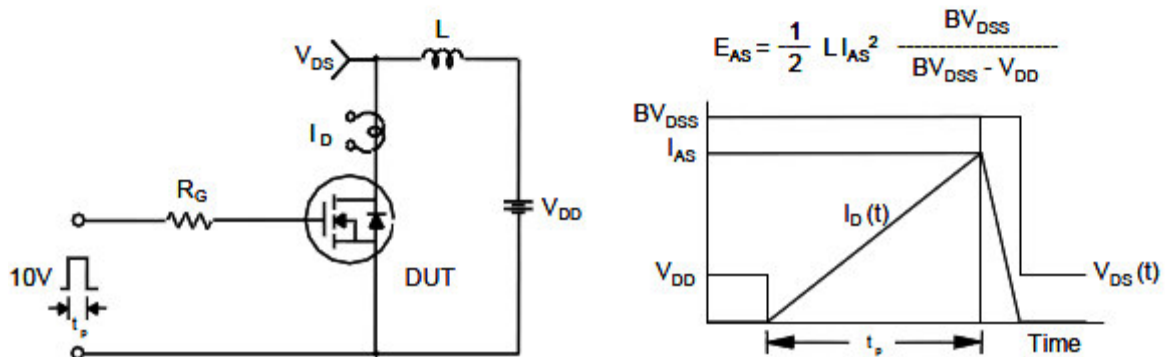
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

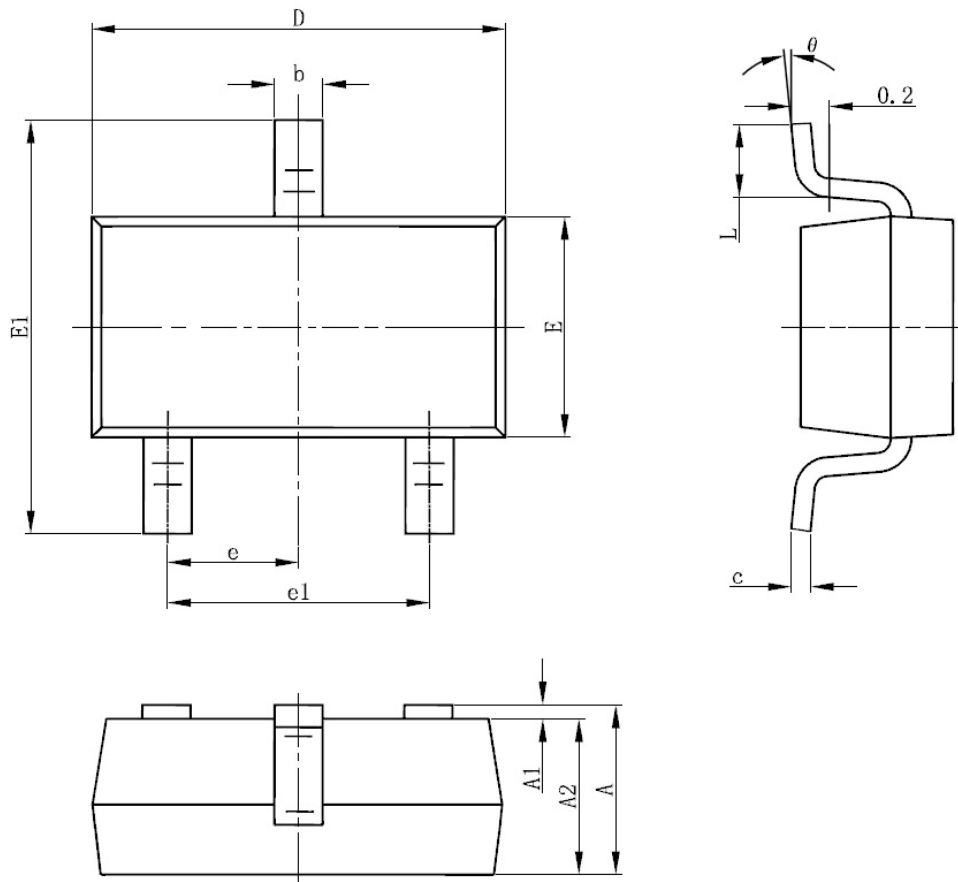


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-23-3L







Dimensions





SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.05	1.25	0.041	0.049
A1	0	0.1	0	0.004
A2	1.05	1.15	0.041	0.045
b	0.3	0.4	0.012	0.016
c	0.1	0.2	0.004	0.008
D	2.82	3.02	0.111	0.119
E	1.5	1.7	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950 (TYP)		0.037 (TYP)	
e1	1.8	2	0.071	0.079
L	0.700 REF		0.028 REF	
L1	0.3	0.6	0.012	0.024
Q	0°	8°	0°	8°



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