GSM2301

20V P-Channel Enhancement Mode MOSFET

Product Description

These P-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.

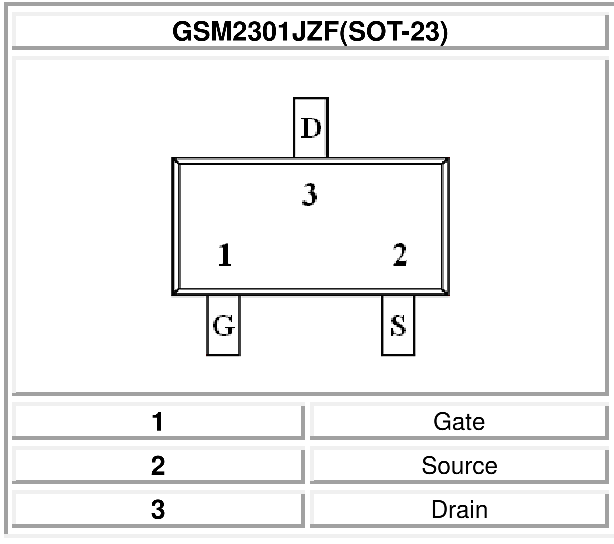
Features

- -20V/-2.8A,$R_{DS(ON)}$=130mΩ@V_{GS}=-4.5V
- improved dv/dt capability
- Fast switching
- Green Device Available
- Suit for -1.8V Gate Drive Applications

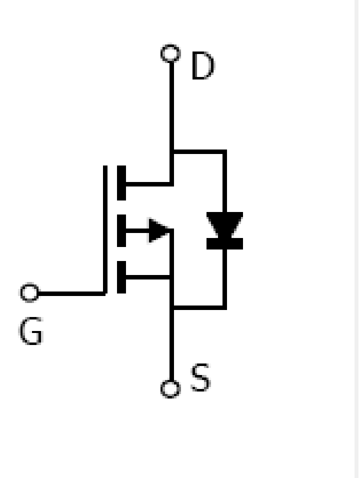
Applications

- Power Management in Notebook
- Load Switch
- Hand-Held instruments

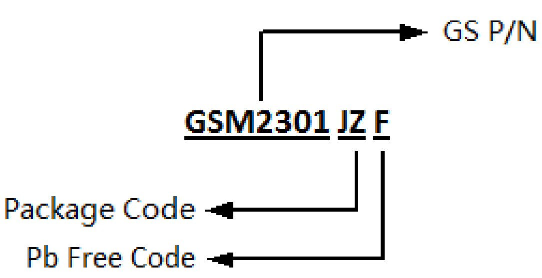
Packages & Pin Assignments



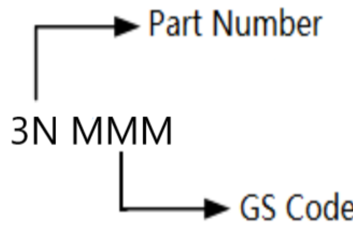
GSM2301JZF(SOT-23)	
1	Gate
2	Source
3	Drain



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM2301JZF	SOT-23	3NMMM

Absolute Maximum Ratings

(T_C=25ºC unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate –Source Voltage		±10	V
I_D	Continuous Drain Current	T_C=25℃	-2.8	A
		T_C=100℃	-1.8	
I_{DM}	Pulsed Drain Current[1]		-10	A
P_D	Power Dissipation	T_C=25℃	1.56	W
	Power Dissipation – Derate above 25℃		0.012	W/ºC
T_J	Operating Junction Temperature Range		-55 to 150	ºC
T_{STG}	Storage Temperature Range		-55 to 150	ºC
$R_{θJA}$	Thermal Resistance-Junction to Ambient		80	ºC/W

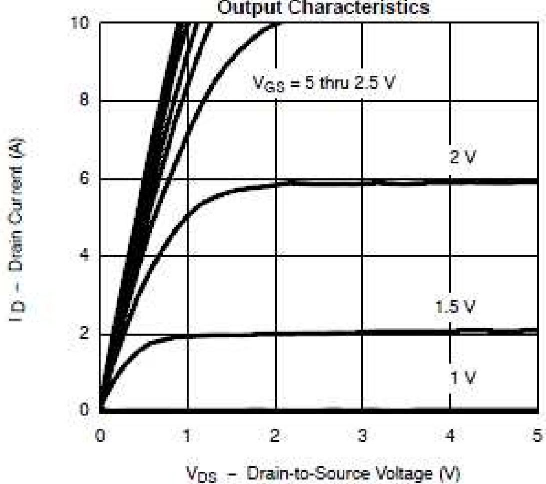
Electrical Characteristics

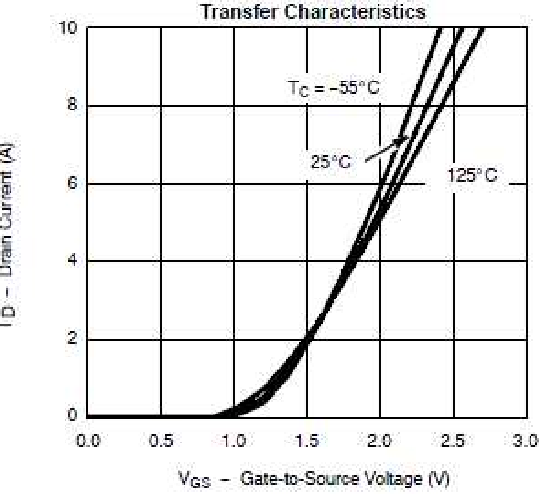
(T_J=25ºC unless otherwise noted)

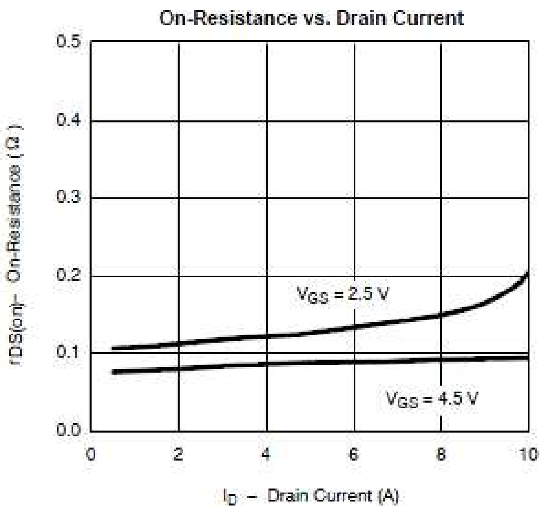
Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250uA	-20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS},I_D=-250uA	-0.3	-0.6	-1.0	V
I_{GSS}	Gate Source Leakage Current	V_{DS}=0V,V_{GS}=±10V			±100	nA
I_{DSS}	Drain Source Leakage Current	V_{DS}=-20V,V_{GS}=0V			-1	uA
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=-4.5V,I_D=-2.8A		96	130	mΩ
		V_{GS}=-2.5V,I_D=-2.0A		140	190	
		V_{GS}=-1.8V,I_D=-1.0A		192	260	
V_{SD}	Diode Forward Voltage	I_S=-1A, V_{GS}=0V			-1	V
I_S	Continuous Source Current	V_G=V_D=0V			-2.5	A
Dynamic						
Q_g	Total Gate Charge[2,3]	V_{DS}=-10V,V_{GS}=-4.5V I_D≡-1A		2.5	5	nC
Q_{gs}	Gate-Source Charge[2,3]			0.36	0.72	
Q_{gd}	Gate-Drain Charge[2,3]			0.5	1.0	
C_{iss}	Input Capacitance	V_{DS}=-15V,V_{GS}=0V f=1MHz		150	300	pF
C_{oss}	Output Capacitance			32	64	
C_{rss}	Reverse Transfer Capacitance			23	46	
$t_{d(on)}$	Turn-On Time[2,3]	V_{DD}=-10V, I_D≡-1.0A, V_{GS}=-4.5V, R_G=25Ω		2	4	ns
t_r				7.8	15	
$t_{d(off)}$	Turn-Off Time[2,3]			16.6	32	
t_f				4.5	9	

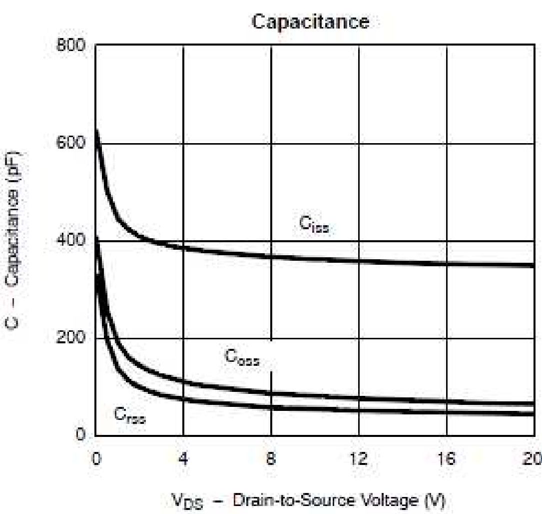
Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

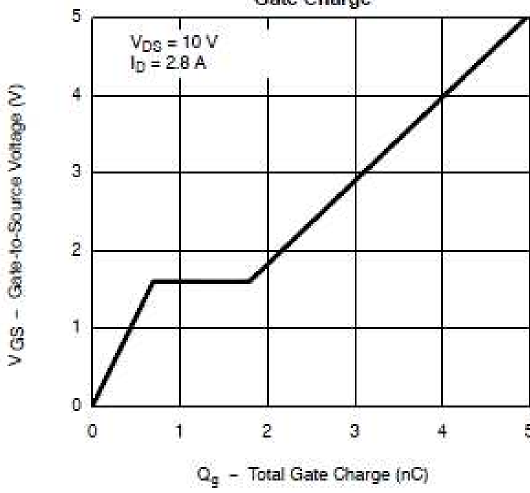
Typical Performance Characteristics

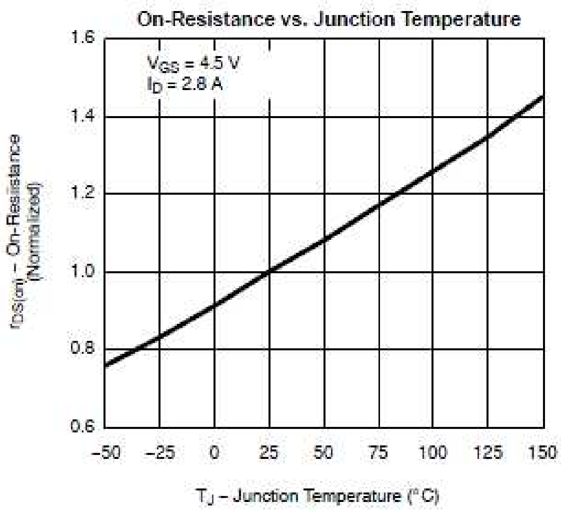




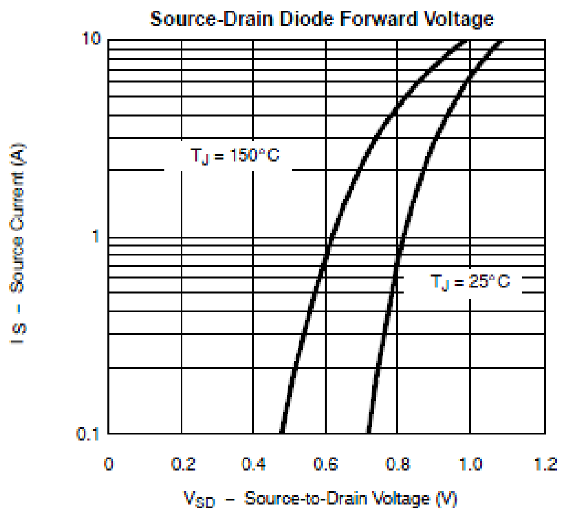


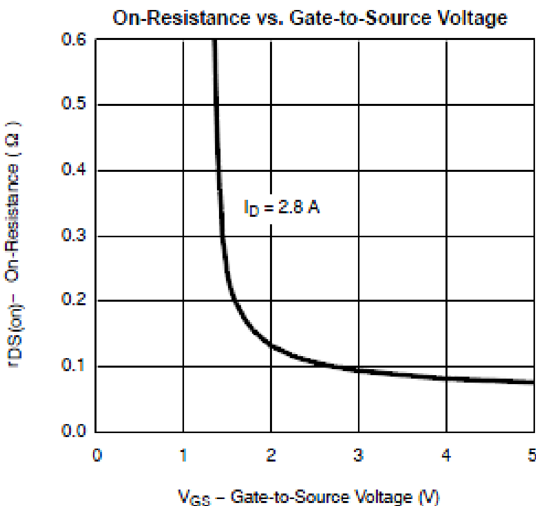


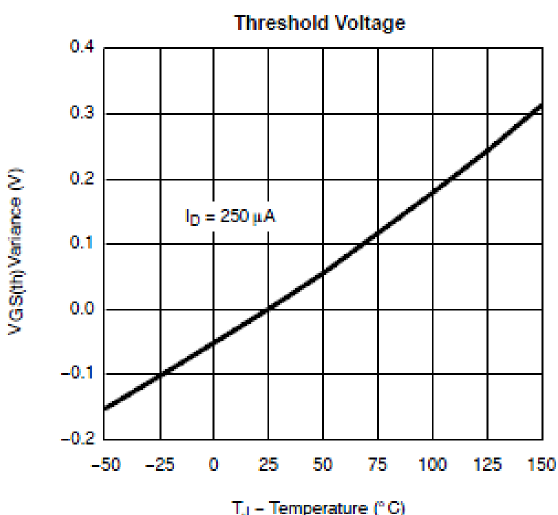


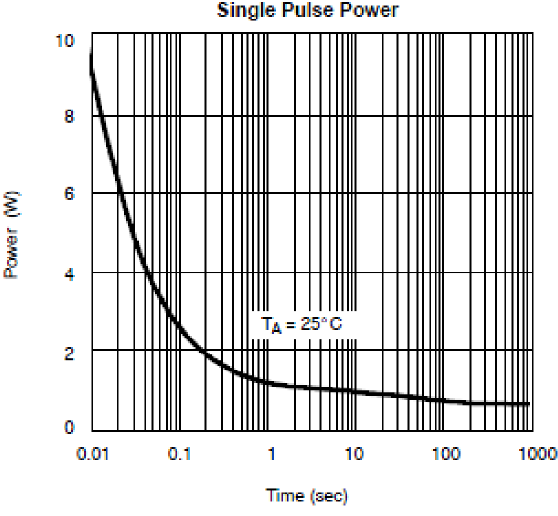


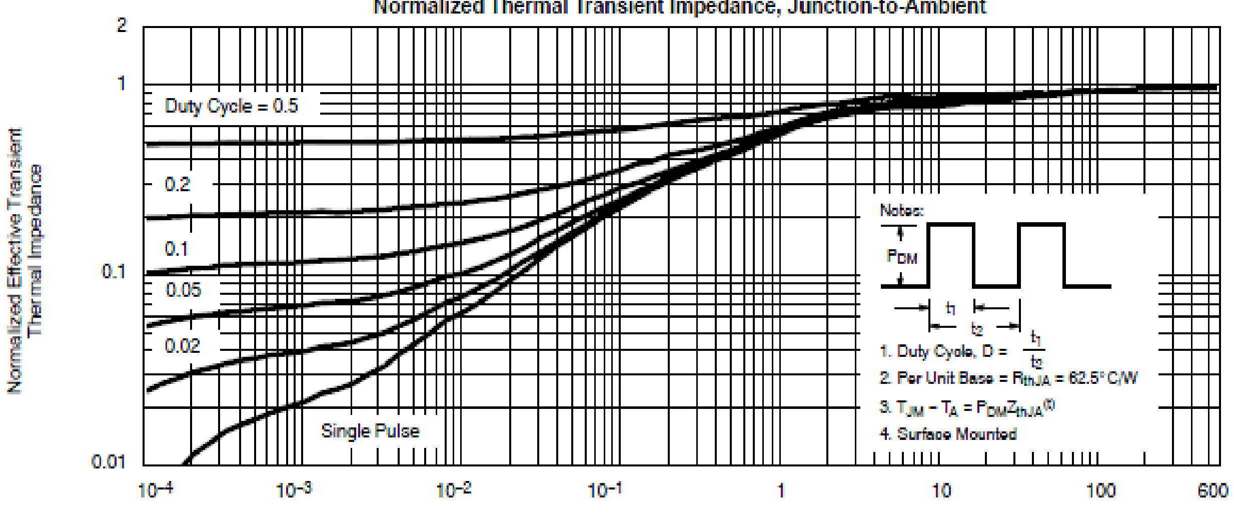
Typical Performance Characteristics (continue)





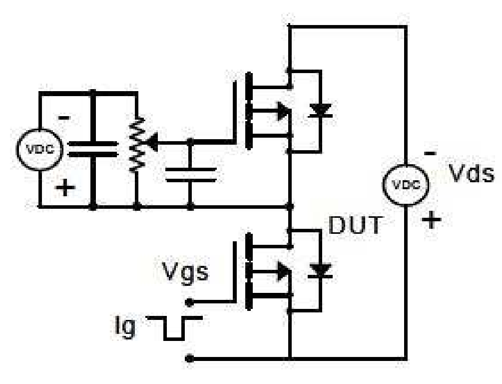


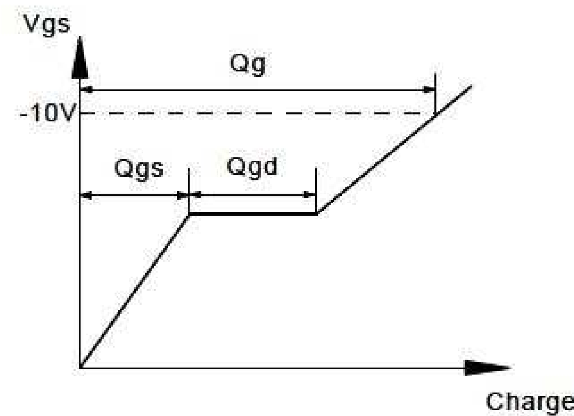




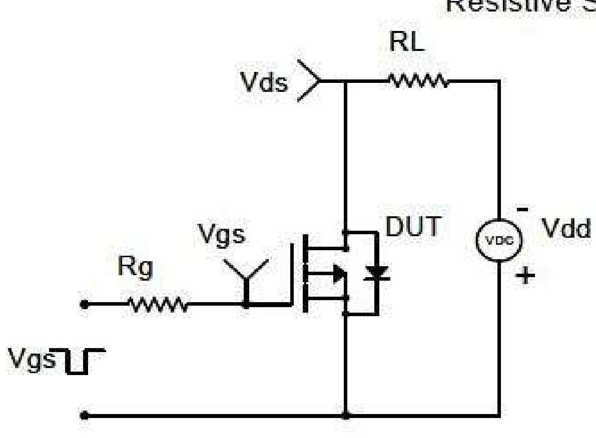
Typical Characteristics

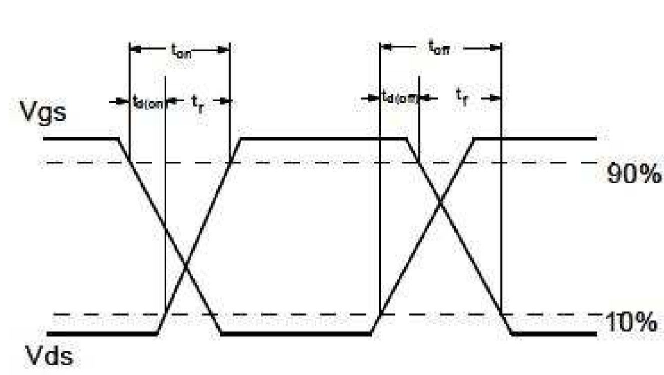
Gate Charge Test Circuit & Waveform



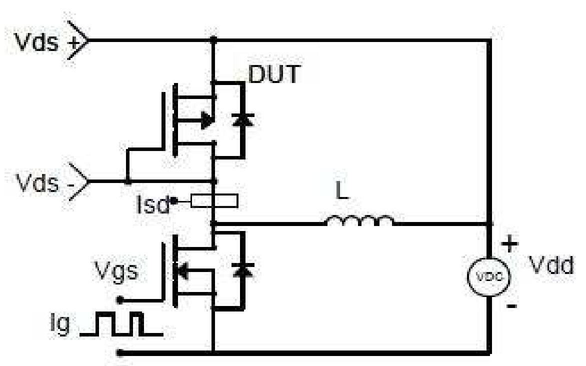


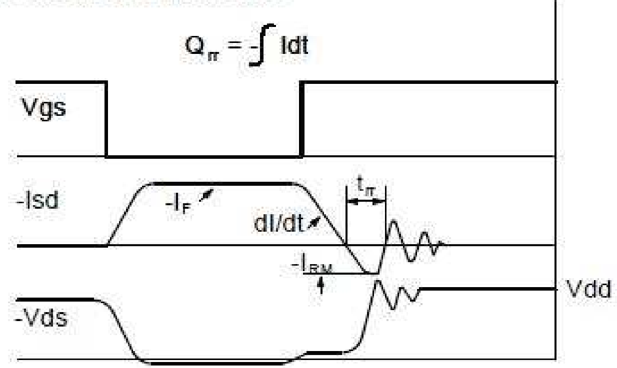
Resistive Switching Test Circuit & Waveforms





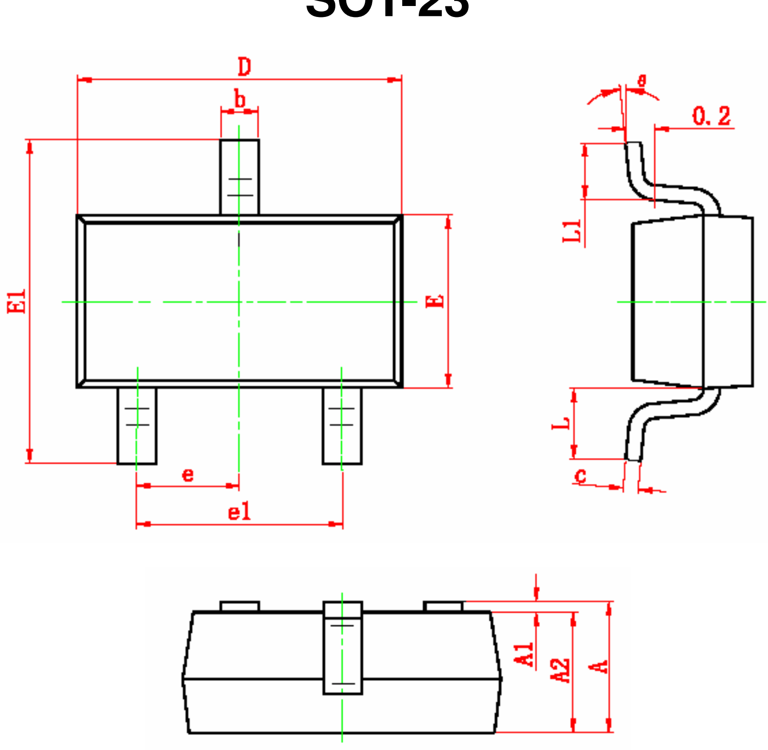
Diode Recovery Test Circuit & Waveforms





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	0º	8º	0º	8º

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