

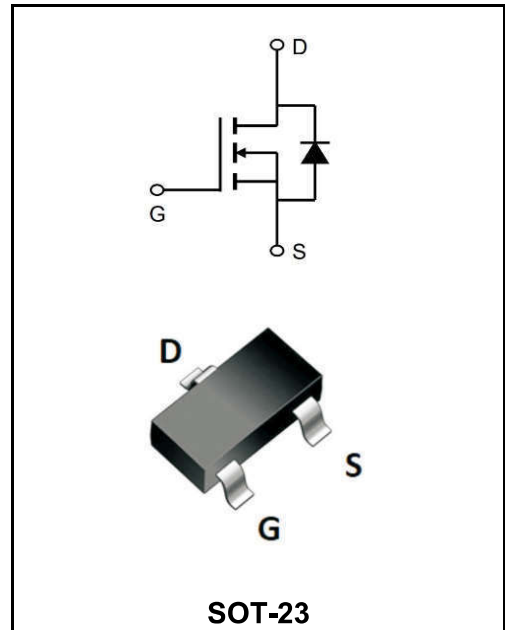
N-Channel Depletion Power MOSFET

MAIN CHARACTERISTICS

I_D	0.03A
V_{DSX}	600V
R_{DS(on)-typ}(@V_{GS}=10V)	< 700Ω(Type:350 Ω)

Features

- ◆Halogen and Antimony Free
- ◆Depletion Mode
- ◆ESD Improved Capability



Product Specification Classification

Part Number	Package	Marking	Pack
DMZ6005E	SOT-23	605E	3000PCS/Tape

Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSX}	600	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	0.03	A
Continuous Drain Current Tc=70°C		0.024	
Pulsed Drain Current	I_{DM}	0.12	
Power Dissipation	P_D	0.5	W
Gate Source ESD (HBM-C=100pF, R=1.5kΩ)	V_{ESD(G-S)}	300	V
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C
Thermal Characteristics			
Parameter	Symbol	Typ.	Units
Maximum Junction-to-Ambient	R_{θJA}	250	°C/W

Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSX}$	$V_{GS} = -5V, I_D = 250\mu A$	600	-	-	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 10V$	-	-	± 100	nA
Off-state Drain to Source Current	$I_{D(off)}$	$V_{DS} = 600V, V_{GS} = -5V$	-	-	0.1	μA
		$V_{DS} = 480V, V_{GS} = -5V, T_a = 125^\circ C$	-	-	10	μA
ON Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = 3V, I_D = 8\mu A$	-2.7	-1.8	-1	V
On-state drain current	I_{DSS}	$V_{GS} = 0V, V_{DS} = 25V$	12	-	-	mA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 0V, I_D = 3mA$	-	350	700	Ω
		$V_{GS} = 10V, I_D = 16mA$	-	400	800	
Dynamic Characteristics						
Forward transconductance	gfs	$V_{DS} = 50V, I_D = 0.01A$	8	17	-	mS
Input Capacitance	C_{iss}	$V_{DS} = 25V,$ $V_{GS} = -5V,$ $f = 1MHz$	-	50	-	pF
Output Capacitance	C_{oss}		-	4.53	-	
Reverse Transfer Capacitance	C_{rss}		-	1.08	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 300V, V_{GS} = -5 \dots 7V$ $R_G = 6\Omega, I_D = 0.01A$	-	9.9	-	ns
Turn-On Rise Time	t_r		-	55.8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	56.4	-	
Turn-Off Fall Time	t_f		-	136	-	
Total Gate Charge	Q_g	$V_{DD} = 400V, V_{GS} = -5V \text{ to } 5V,$ $I_D = 0.01A$	-	1.14	-	nC
Gate-Source Charge	Q_{gs}		-	0.5	-	
Gate-Drain Charge	Q_{gd}		-	0.37	-	
Drain-source Diode Characteristics						
Diode Forward Current	I_S	$T_a = 25$	-	-	0.025	A
Pulse Diode Forward Current	I_{SM}		-	-	0.1	A
Forward Diode Voltage	V_{SD}	$V_{GS} = -5V, I_F = 16mA$	-	-	1.2	V
Gate-source Zener diode						
Gate-source breakdown voltage	V_{GSO}	$I_{GS} = \pm 1mA$ (Open Drain)	20	-	-	V

Ratings and Characteristic Curves

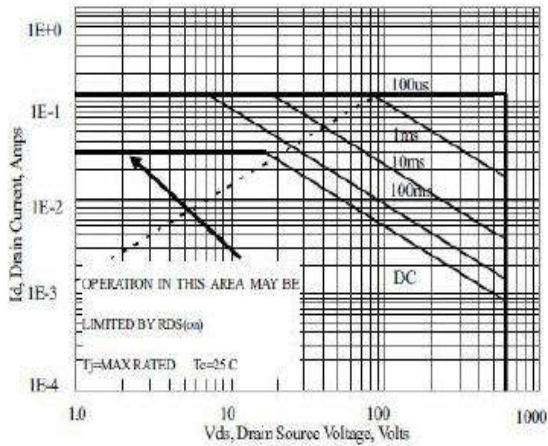


Figure 1 Maximum Forward Bias Safe Operating Area

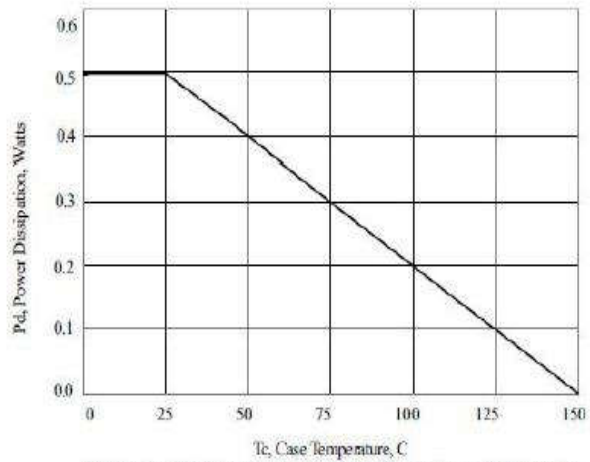


Figure 2 Maximum Power Dissipation vs Case Temperature

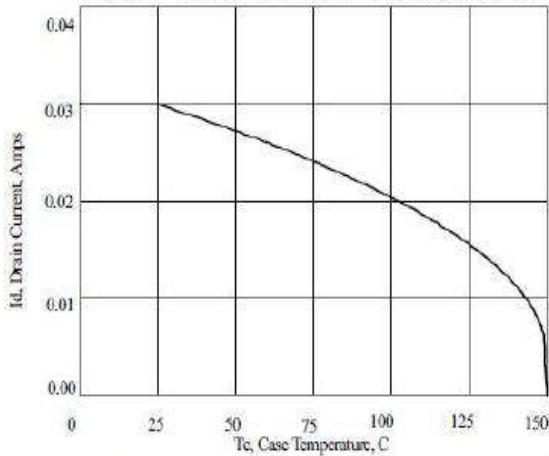


Figure 3 Maximum Continuous Drain Current vs Case Temperature

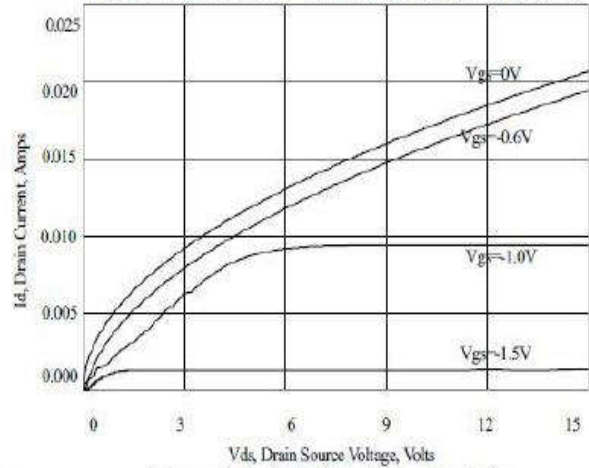


Figure 4 Typical Output Characteristics

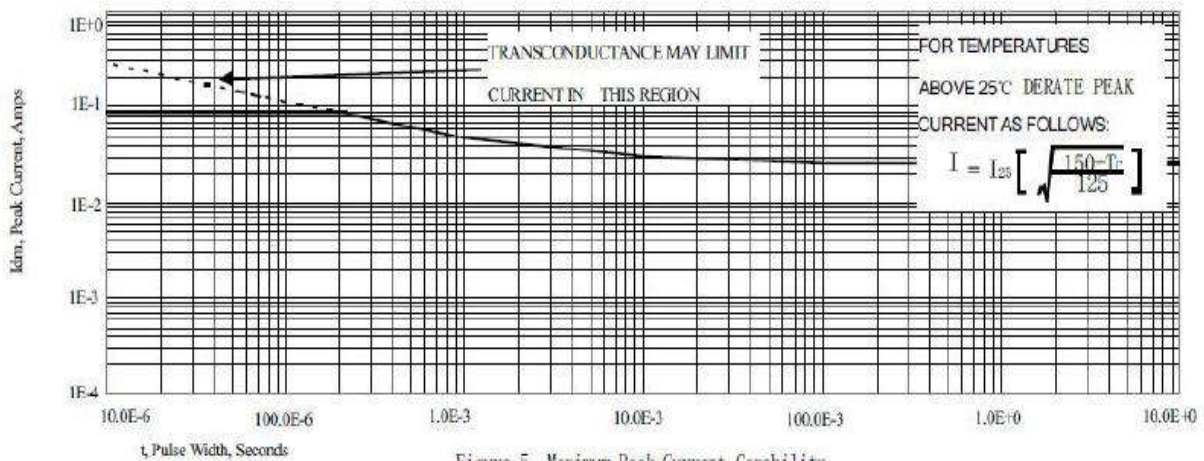
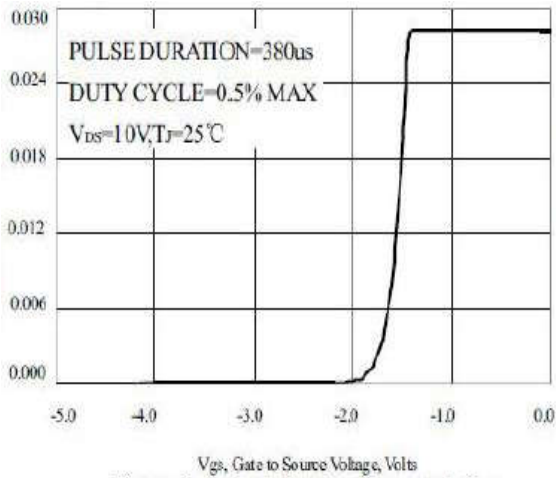
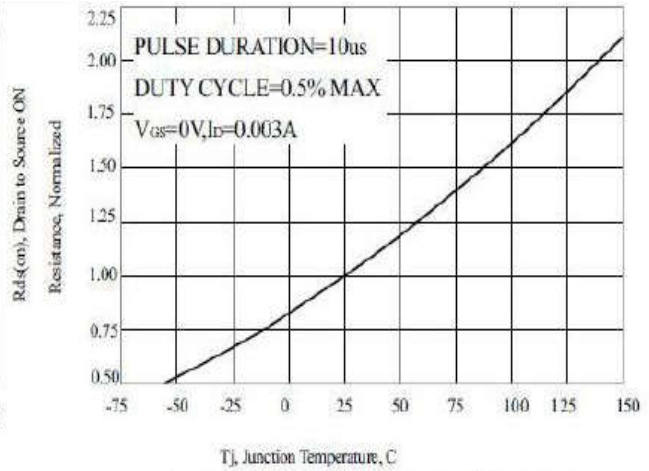


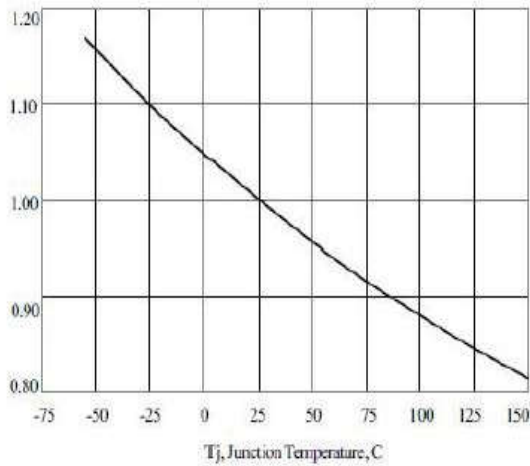
Figure 5 Maximum Peak Current Capability



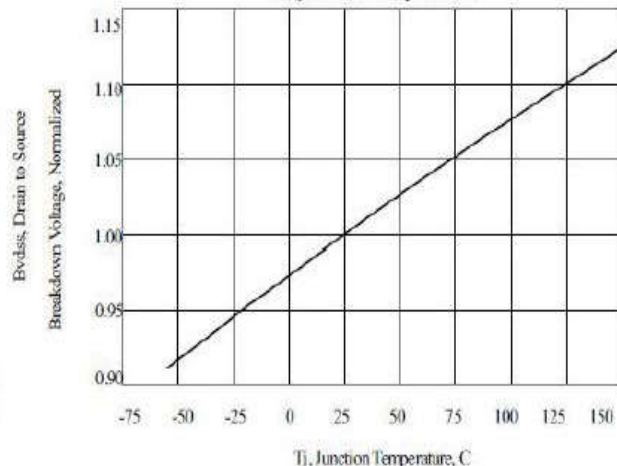
Vgs, Gate to Source Voltage, Volts
Figure 6 Typical Transfer Characteristics



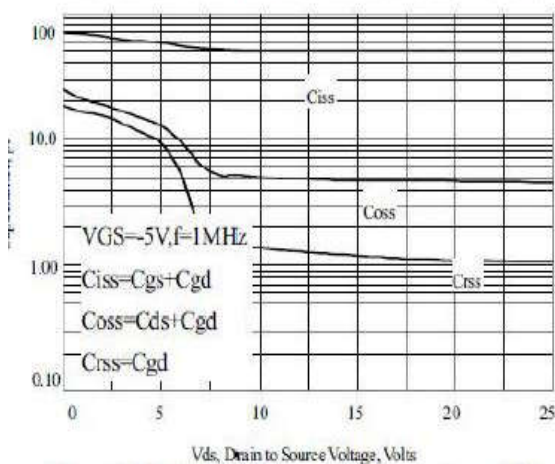
Tj, Junction Temperature, C
Figure 7 Typical Drain to Source ON Resistance vs Junction Temperature



Tj, Junction Temperature, C
Figure 8 Typical Threshold Voltage vs Junction Temperature



Tj, Junction Temperature, C
Figure 9 Typical Breakdown Voltage vs Junction Temperature



Vds, Drain to Source Voltage, Volts
Figure 10 Typical Capacitance vs Drain to Source Voltage

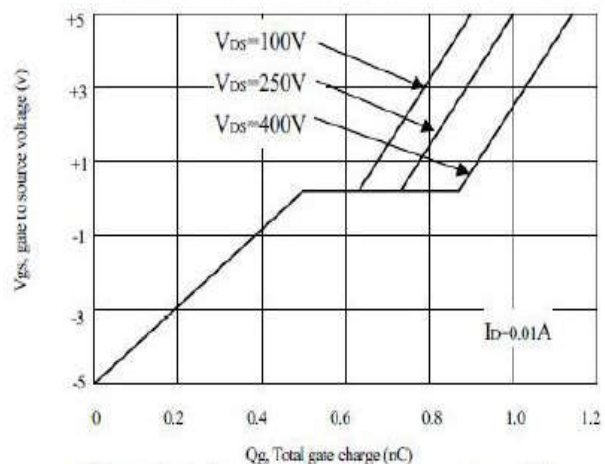


Figure 11 Typical Gate Charge vs Gate to Source Voltage

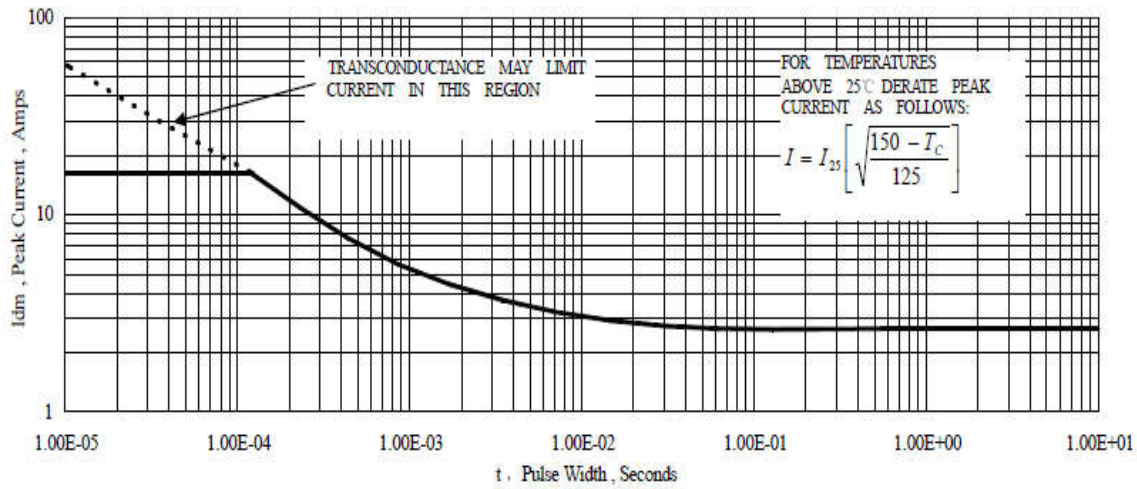


Figure 6 Maximum Peak Current Capability

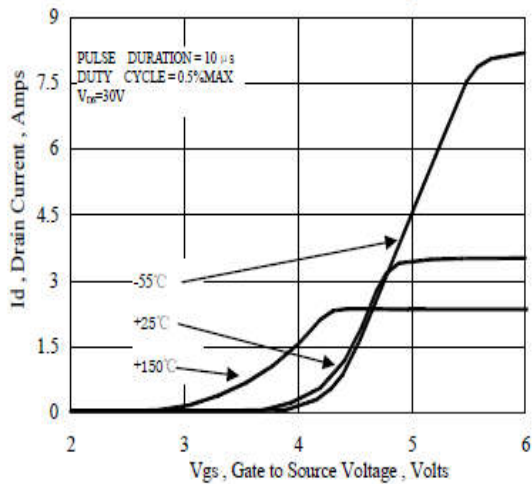


Figure 7 Typical Transfer Characteristics

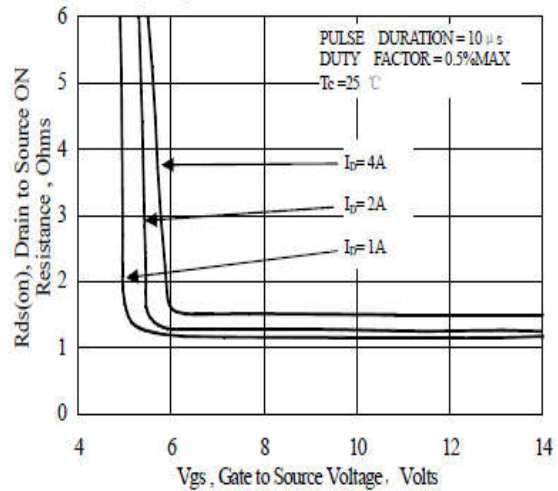


Figure 8 Typical Drain to Source ON Resistance vs Gate Voltage and Drain Current

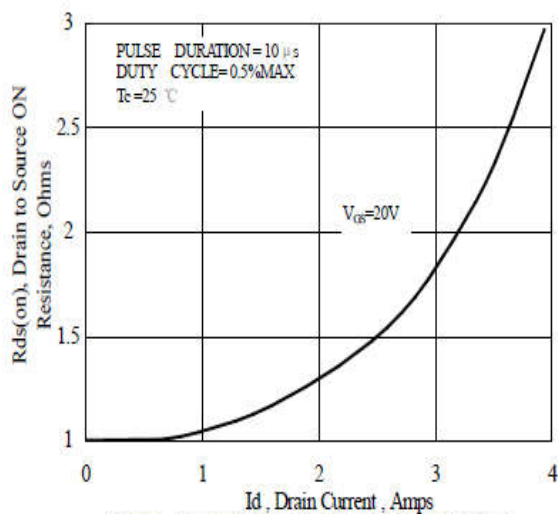


Figure 9 Typical Drain to Source ON Resistance vs Drain Current

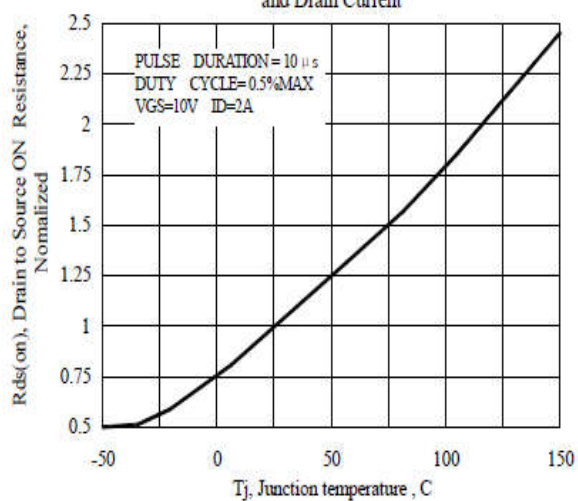
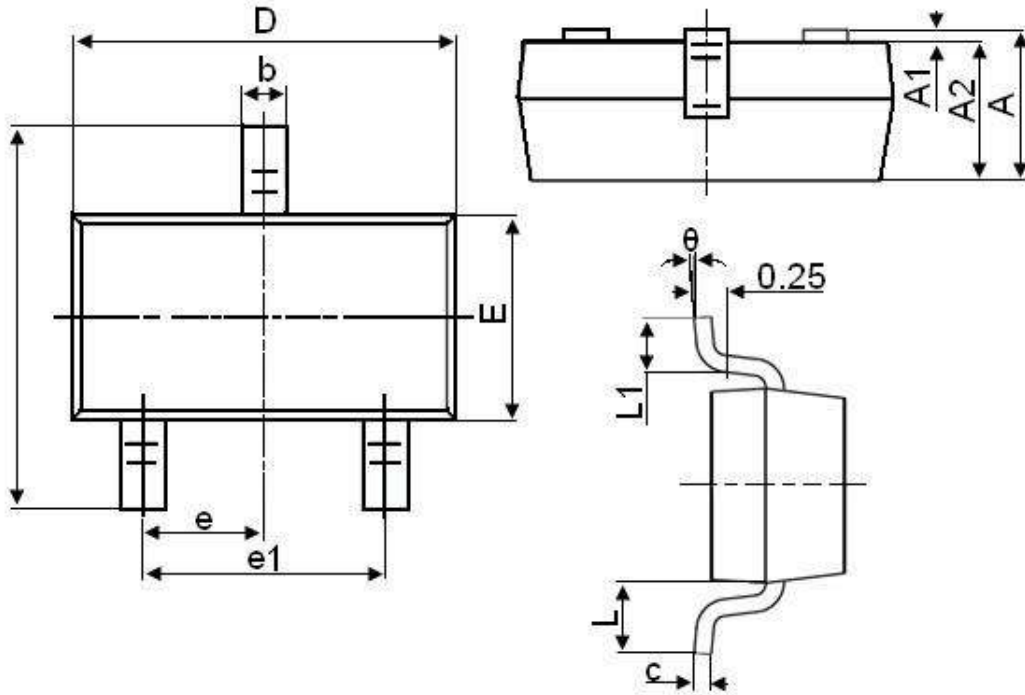


Figure 10 Typical Drain to Source on Resistance vs Junction Temperature

SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°