

N-Channel Enhancement Mode Field Effect Transistor

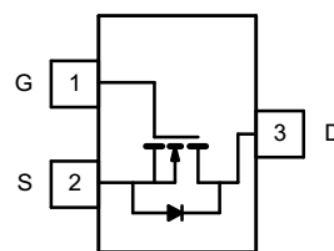
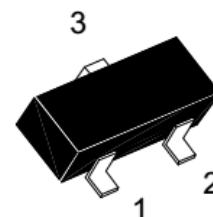
Features

- * 20V / 6.0A ,
 $R_{DS(ON)} = 30\text{ m}\Omega$ (type.) @ $V_{GS} = 10\text{V}$. $I_D = 6.0\text{A}$
 $R_{DS(ON)} = 40\text{ m}\Omega$ (type.) @ $V_{GS} = 4.5\text{V}$. $I_D = 3.0\text{A}$
 $R_{DS(ON)} = 55\text{ m}\Omega$ (type.) @ $V_{GS} = 2.5\text{V}$. $I_D = 2.0\text{A}$
- * TrenchFET Power MOSFET
- * Fast Switching Speed and Rugged
- * Low $R_{DS(ON)}$.
- * Lead Free Available(RoHS Compliant)
- * SOT-23 Package

Applications

- * Load Switch for Portable Devices
- * DC/DC Converter
- * PCMCIA Cards

Pin Description at SOT-23



N-Channel MOSFET

Package Marking And Ordering Information

Device	Device Marking	Device Package	Reel Size	Quantity
SWM2300N-M3TR	-	SOT-23	7"	3000

ABSOLUTE MAXIMUM RATINGS (TA = 25°C UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Unit
Drain - Source Voltage		V_{DS}	20	V
Gate - Source Voltage		V_{GS}	+/-10	V
Continuous Drain Current, ^{note1} $T_J = 125^\circ\text{C}$		I_D	6.0	A
Pulsed Drain Current		I_{DM}	20	A
Power Dissipation ^{note1}	$T_A = 25^\circ\text{C}$	P_D	1.4	W
	$T_A = 70^\circ\text{C}$		0.85	
Single Pulse Avalanche Energy		E_{AS}	43	mJ
Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	'C
Maximum Junction-to-Ambient ^{note 2}		R_{QJA}	90	'C/W

Note: 1. Repetitive rating: pulse width limited by max. junction temperature.

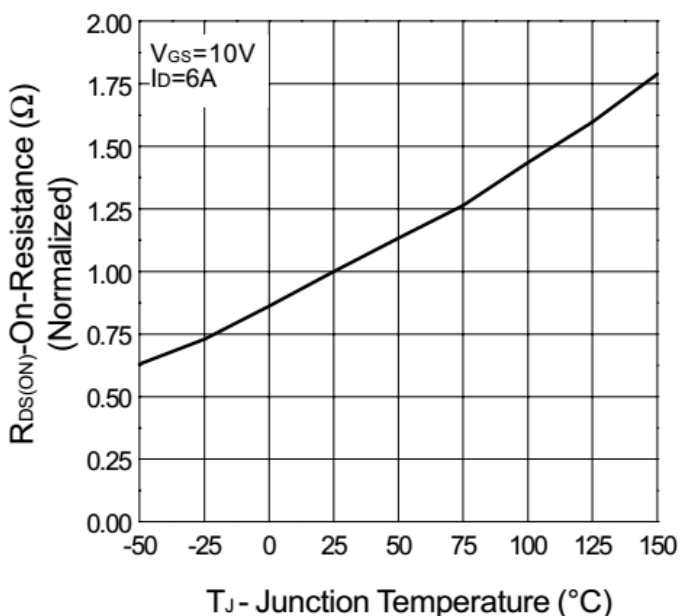
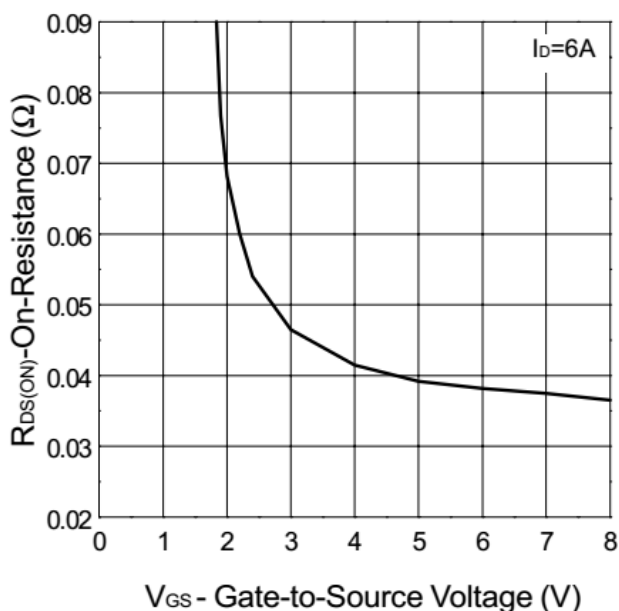
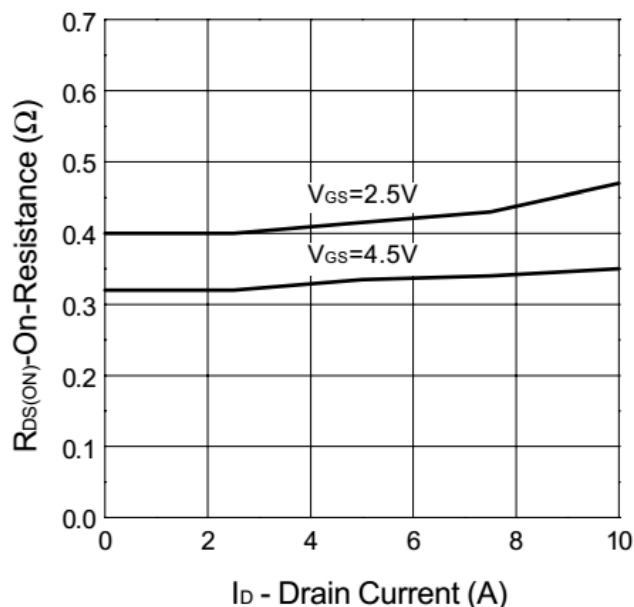
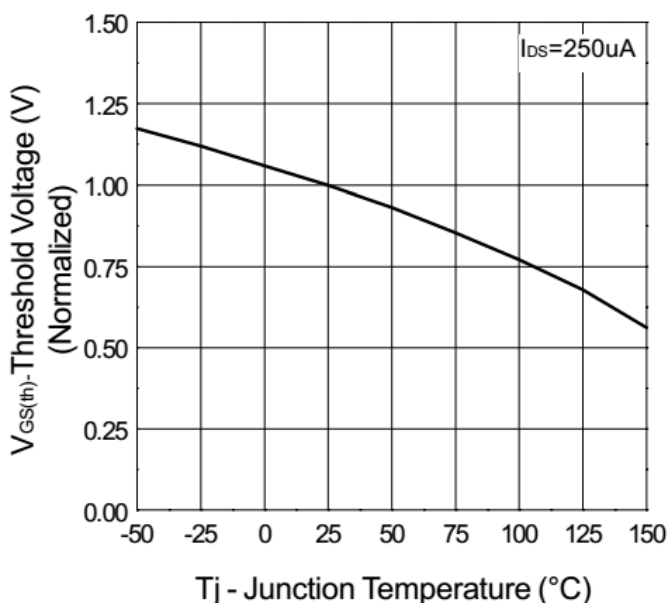
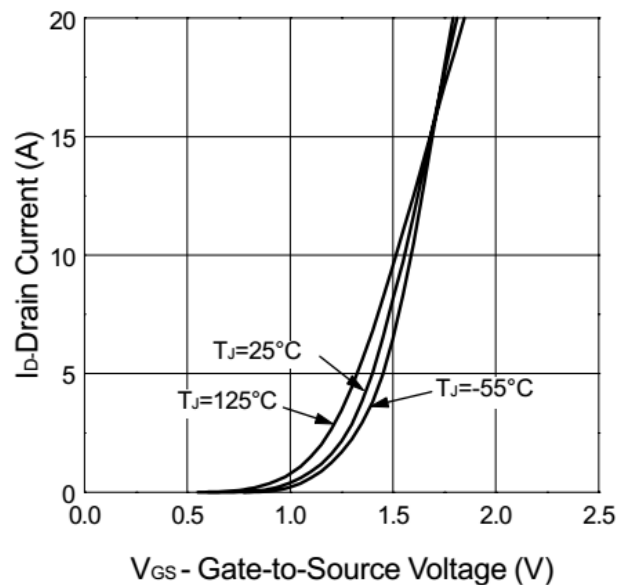
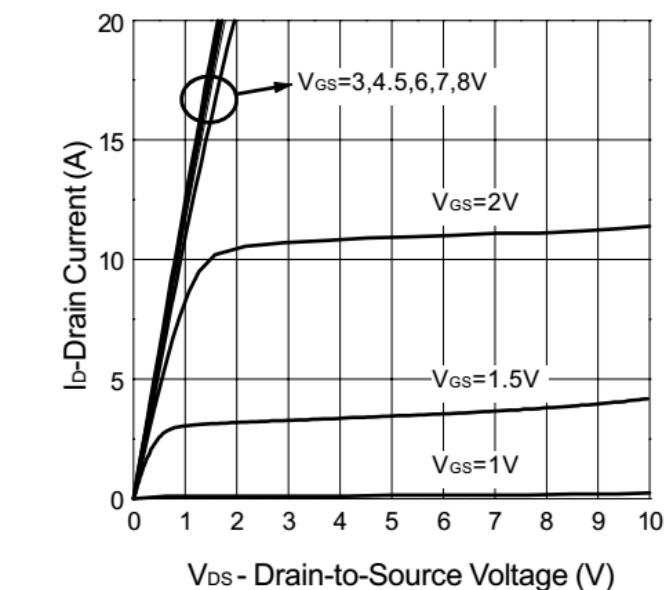
2. Surface mounted on 1" square single layer 1oz. Copper FR4 board, steady state.

ABSOLUTE MAXIMUM RATINGS (TA = 25°C UNLESS OTHERWISE NOTED)

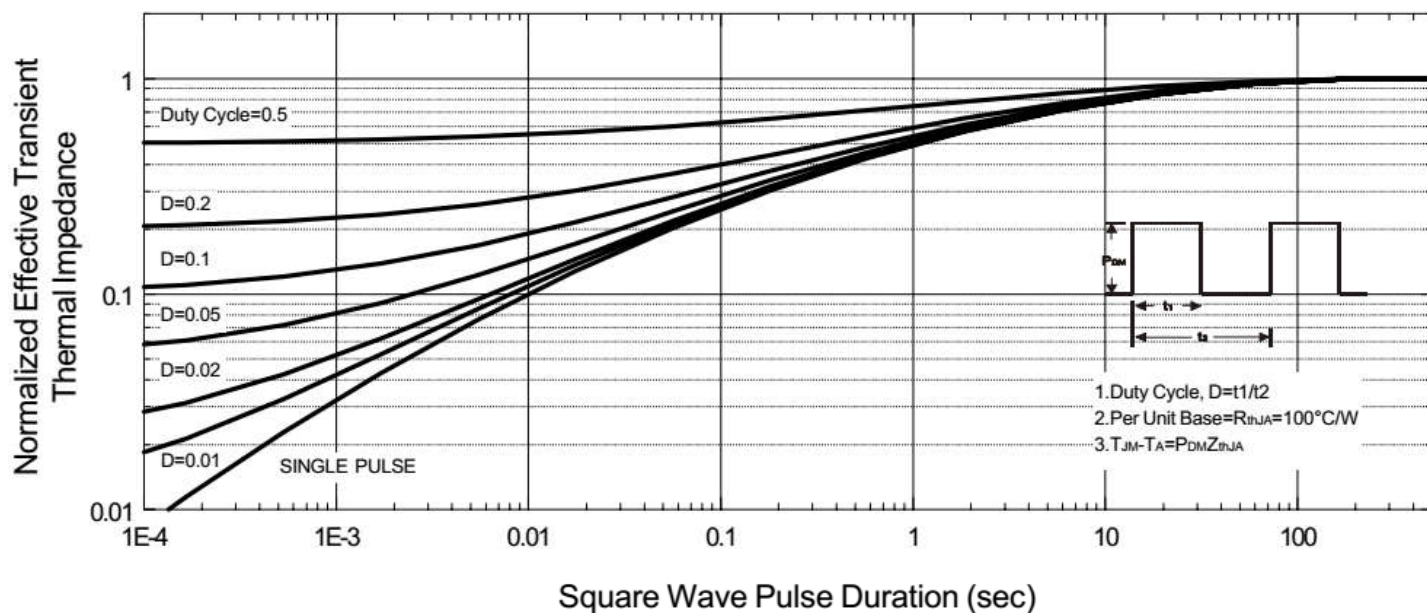
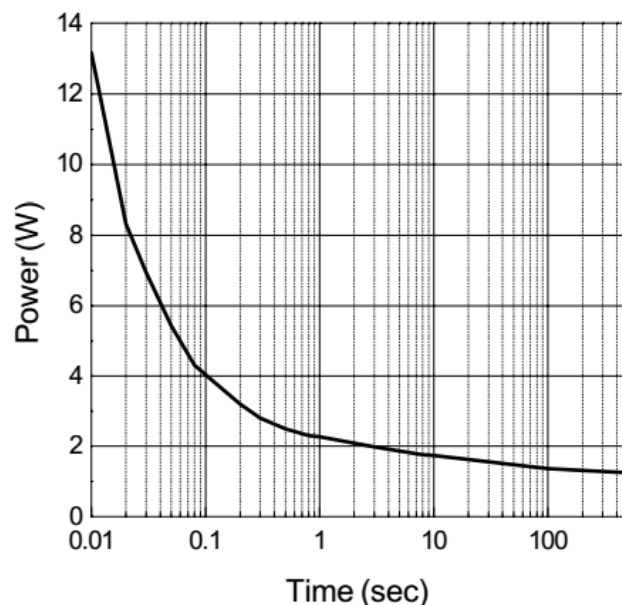
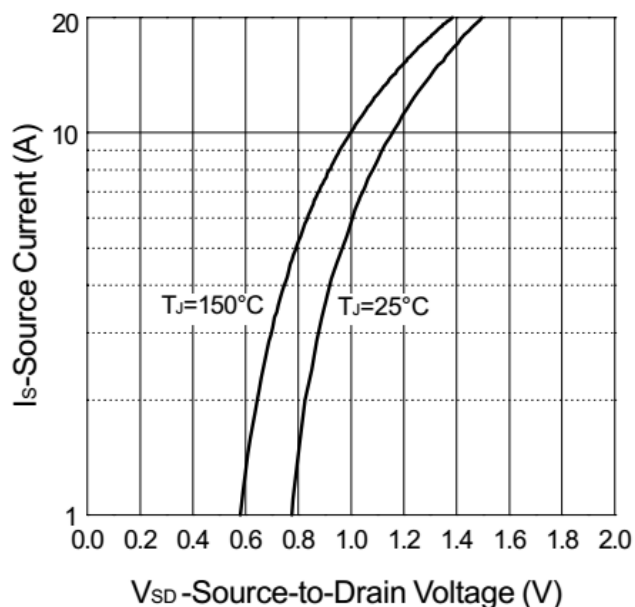
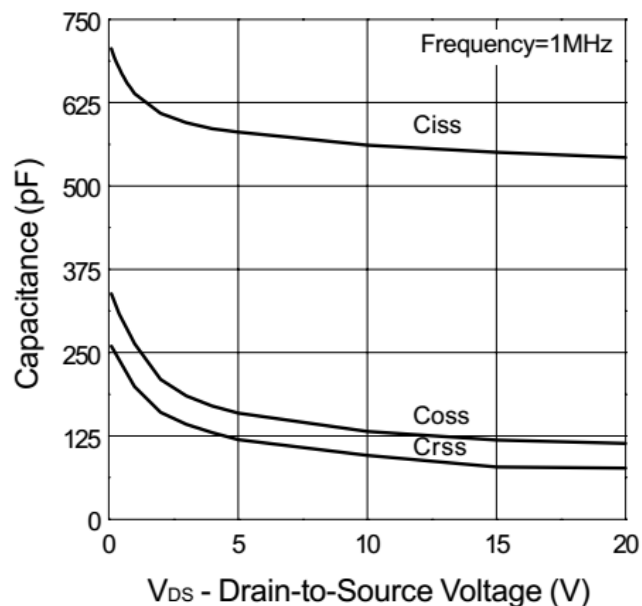
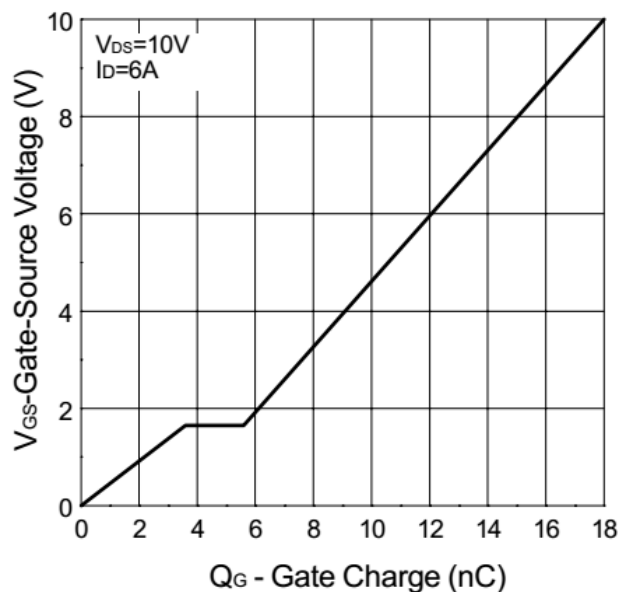
Parameter	Symbol	Test Conditions	SWM2300N			Unit
			Min	Typ	Max	
Off Characteristics						
Drain -Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250uA	20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V	-	-	1.0	uA
Gate-Body Leakage	I _{GSS}	V _{GS} = +/-10, V _{DS} =0V	-	-	+/-100	nA
On Characteristics						
Gate -Threshold Voltage ^{note2}	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	0.5	0.78	1.0	V
Drain-Source-On-Resistance ^{note2}	R _{DS(on)}	V _{GS} = 10V, I _D = 6.0A	-	28	30	mΩ
		V _{GS} = 4.5V, I _D = 3.0A	-	38	40	
		V _{GS} = 2.5V, I _D = 2.0A	-	52	55	
On-State Drain Current ^{note2}	I _{D(ON)}	V _{DS} = 5V, V _{GS} =4.5V	5	-	-	A
Forward Tranconductance ^{note2}	g _{fs}	V _{DS} = -10V, I _D = -4.3A	30	-	-	S
Dynamic Characteristics						
Input Capacitance	C _{ISS}	V _{DS} = 15V, V _{GS} =0V F=1MHz	-	888	-	pF
Output Capacitance	C _{OSS}		-	144	-	
Reverse Transfer Capacitance	C _{RSS}		-	115	-	
Total Gate Charge	Q _g	V _{DS} = 10V, V _{GS} = 4.5V I _D = 3.5A	-	16.8	-	nC
Gate to Source Charge	Q _{gs}		-	2.5	-	
Gate to Drain Charge	Q _{gd}		-	5.4	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(ON)}	V _{DD} =10V, I _D =1A V _{GS} =4.5V, R _L =10Ω R _{GEN} =6Ω	-	31.8	-	ns
Rise Time	t _r		-	14.5	-	
Turn-Off Delay Time	t _{d(OFF)}		-	50.3	-	
Fall Time	t _f		-	31.9	-	
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Current ^{note2}	I _s		-	-	1.25	A
Diode Forward Voltage	V _{SD}	I _s = 1.25A V _{GS} =0V	-	0.825	1.3	V

Note 2. Pulse width ≤ 300us; duty cycle ≤ 2%

Typical Characteristics (TA = 25°C unless otherwise noted)



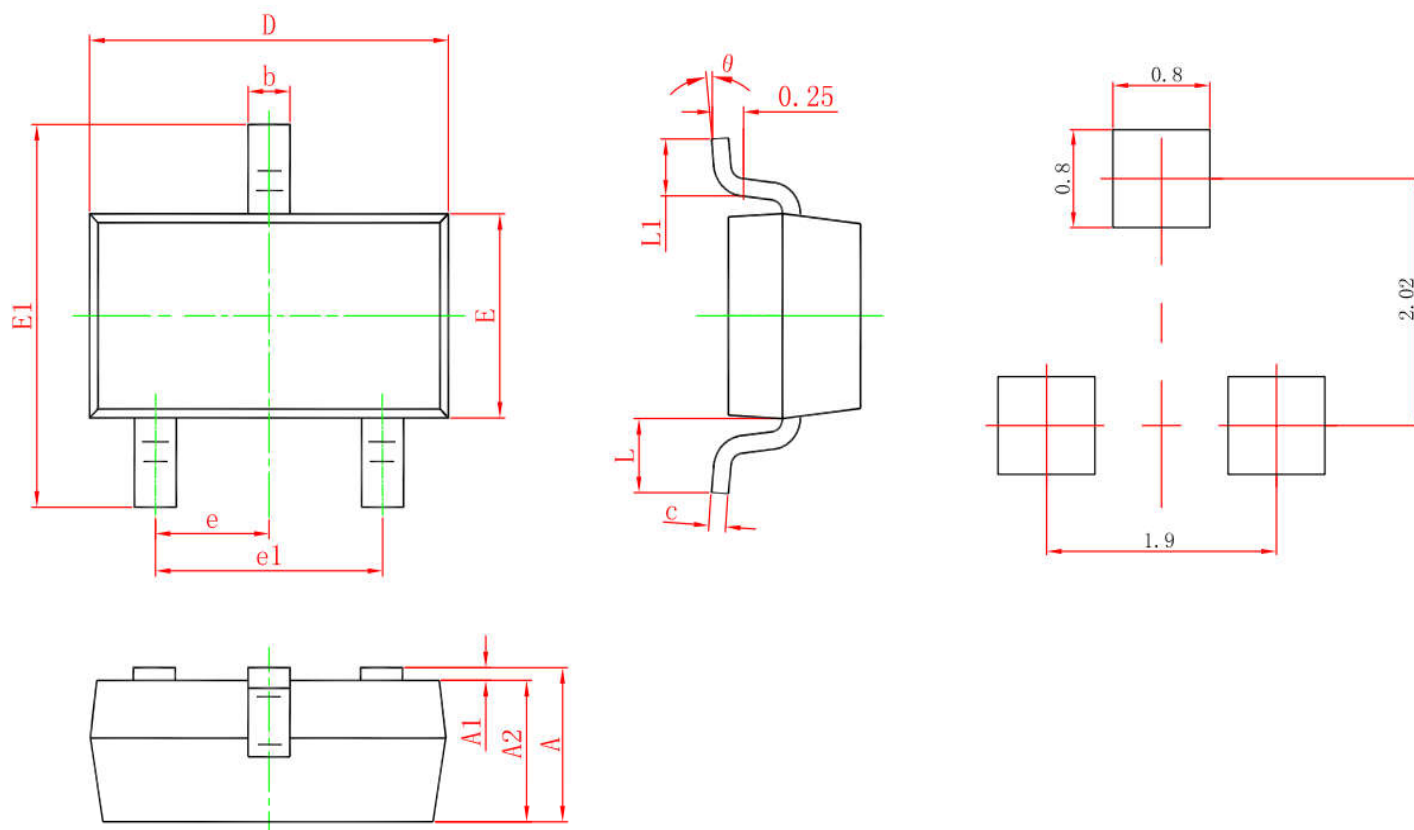
Typical Characteristics (Continued)



Packaging Information

PKG: SOT-23

unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
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°

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