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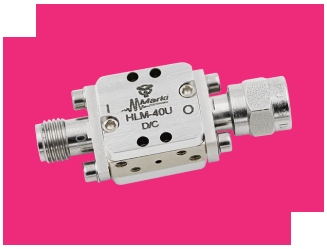
HLM-40U

High Power 40GHz Limiter

DEVICE OVERVIEW

General Description

The HLM-40 is a high-power GaAs Schottky diode signal limiter featuring high IP3 and high power handling. It offers low insertion loss and low return loss from DC through Ka band and has a typical 1dB compression point of 15dBm. Its high power handling makes it ideal for protecting sensitive components and for applications requiring high linearity.



Download s-parameters here

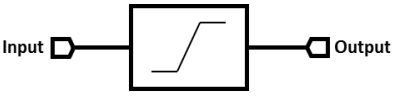
Features

- DC to 40 GHz limiter
- 20W Peak Power (pulsed), 4W CW
- 18dBm Flat Leakage @ 1W CW
- Typical P1dB of 15dBm
- Chassis mountable housing

Applications

- RF Transceivers
- Test and Measurement Equipment
- SATCOM

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
HLM-40U	High Power 40GHz Limiter	U	Standard	REACH RoHS	Released	EAR99

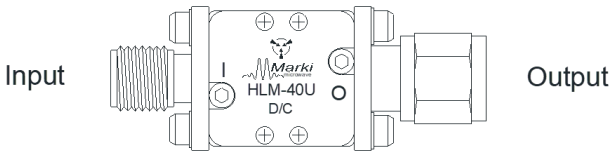
Table Of Contents

Revision History

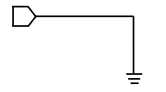
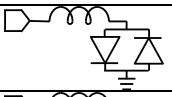
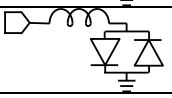
Revision Code	Revision Date	Comment
-	2019-09-01	Datasheet Initial Release
A	2019-10-01	Corrected References
B	2019-12-01	Updated Graphs
C	2023-02-01	Updated Outline Drawing
D	2025-04-16	Updated Outline Drawing

Port Configuration and Functions

Port Diagram



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	U package ground is provided through metal housing and outer coax conductor.	
Input	Input	2.92F	The input port is diode connected for the U package.	
OUT	Output	2.92M	The output port is diode connected for the U package.	

Specifications

Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
RF Power Handling , Average	4	W
RF Power Handling , Peak	20	W

RF Power Handling represents an instantaneous, catastrophic limit and it isn't derated for frequency, temperature, pulse conditions, or unit to unit variation

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Weight	Package name: U	10g
Dimensions	-	13.21 x 14.22 mm

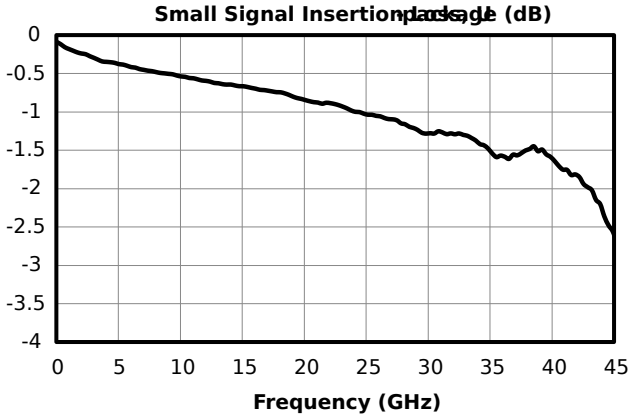
Electrical Specifications

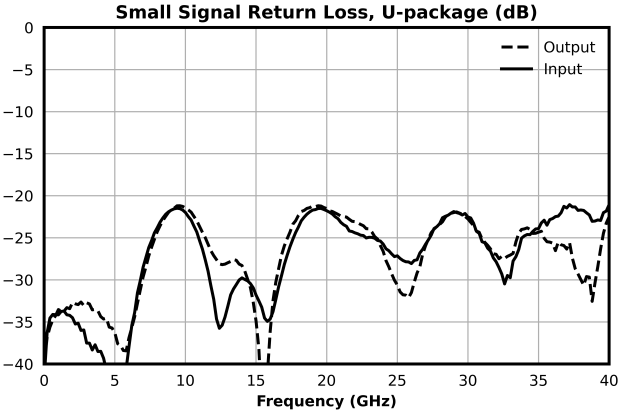
The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the connectorized U-package limiter unless otherwise specified. Linear Specifications valid for input power up to the 0.1dB compression point.

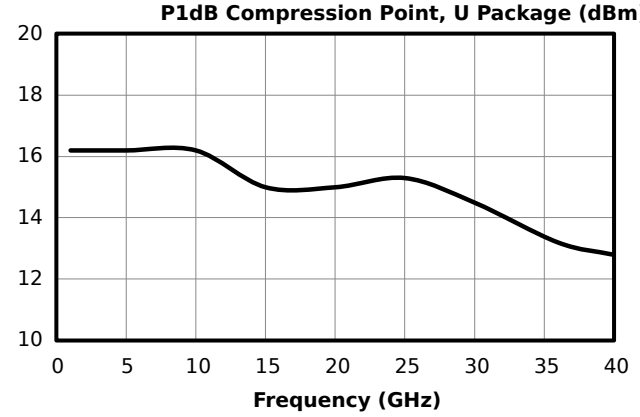
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Flat Leakage	-	0	40	-	18	-	dB
Flat Leakage	-	20	20	-	16	-	dBm
Input P1dB	-	0	40	-	15	-	dBm
Insertion Loss	-	0	40	-	1	-	dB
Recovery Time [1]	-	0	40	-	10	-	ps
Return Loss	-	0	40	-	22	-	dB

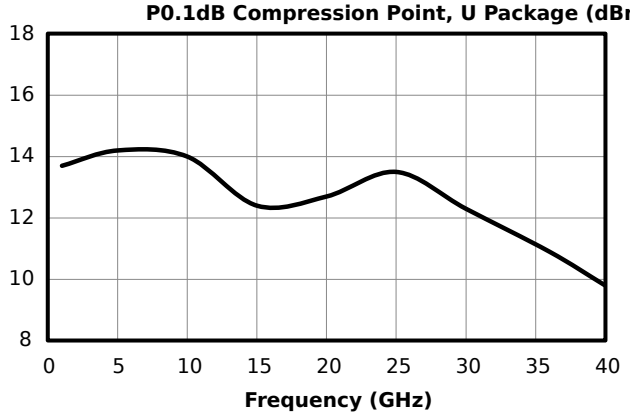
[1] Calculated based on equivalent capacitance and resistance

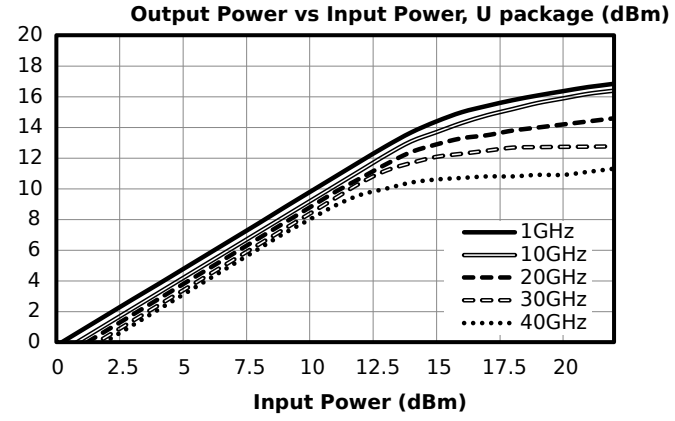
Typical Performance Plots

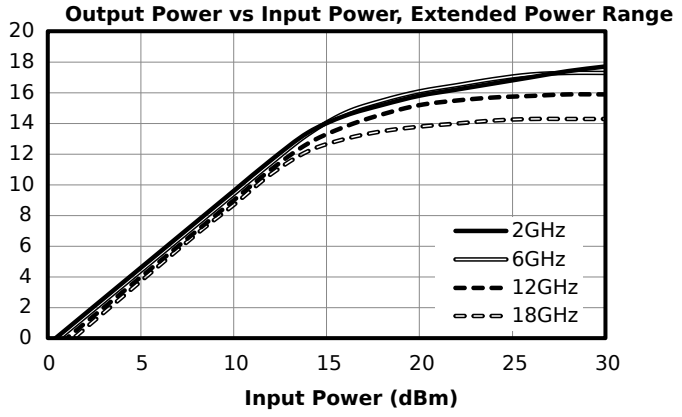


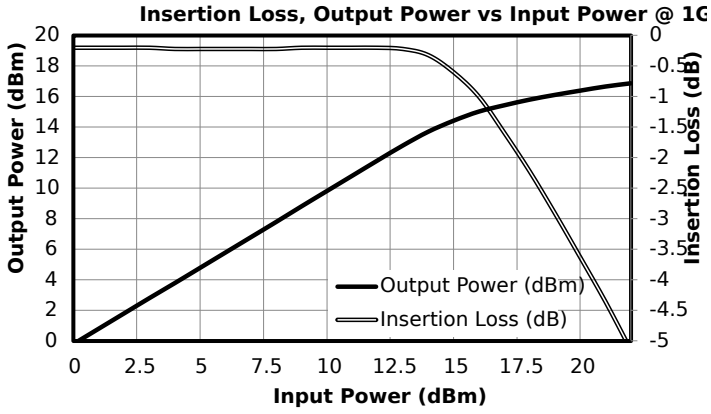


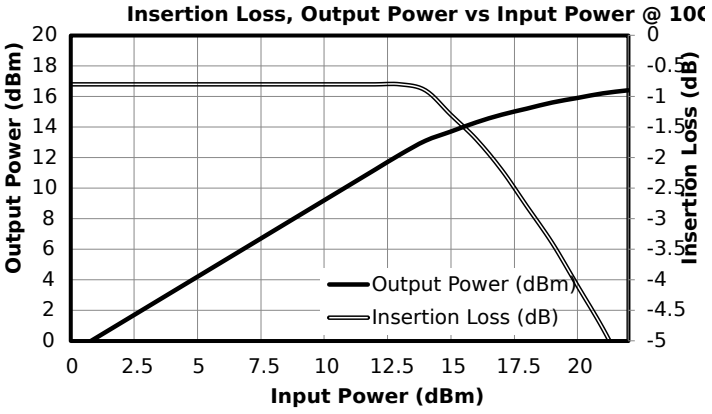


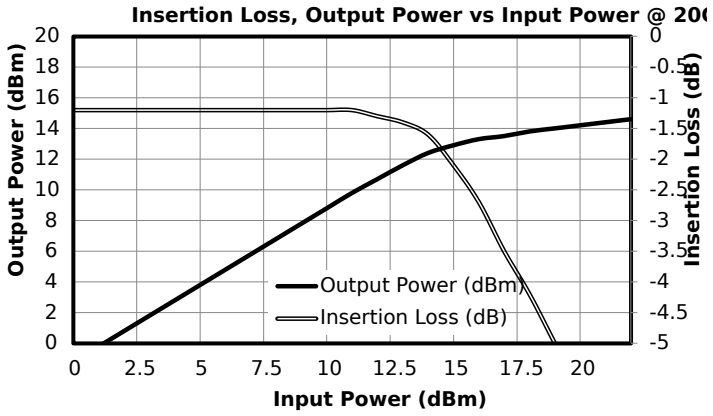


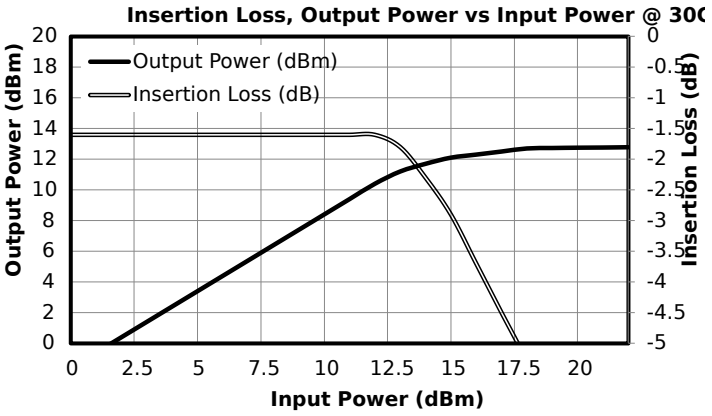


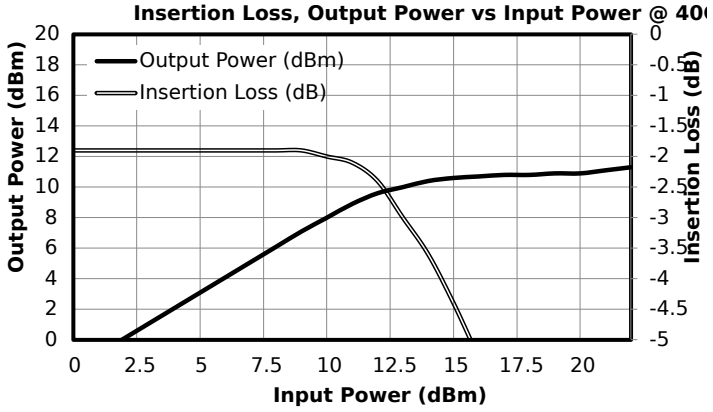


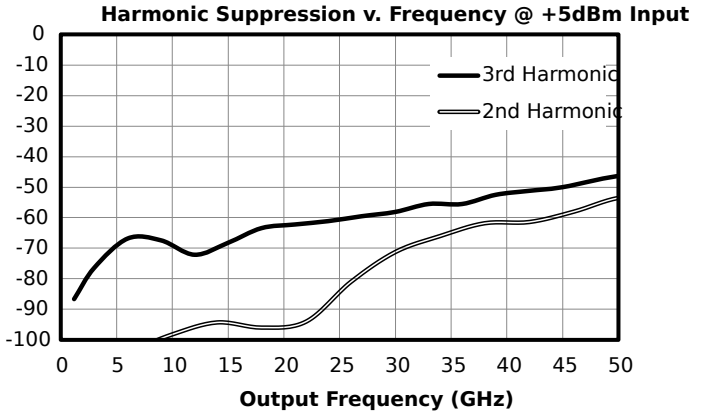


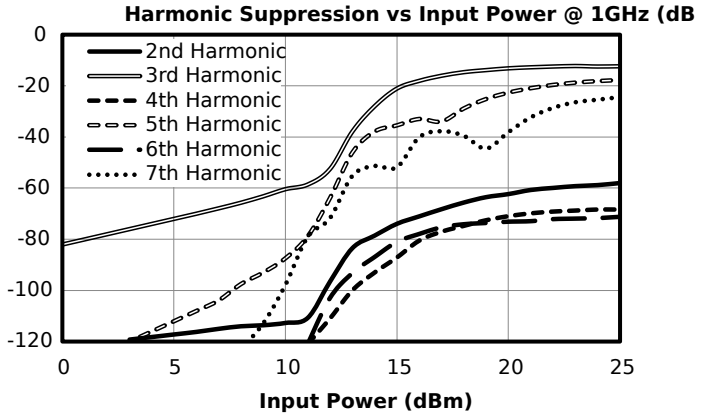


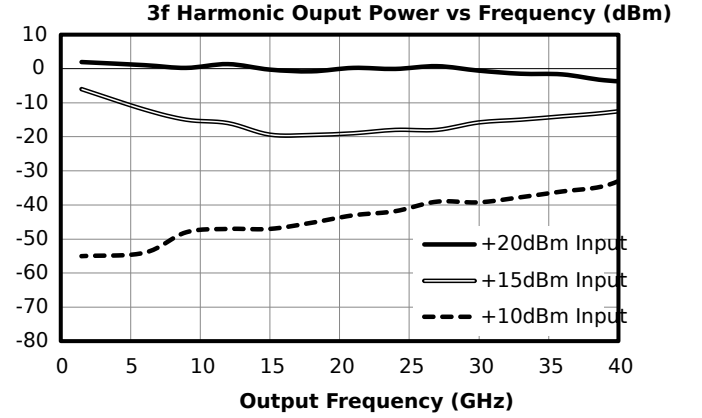


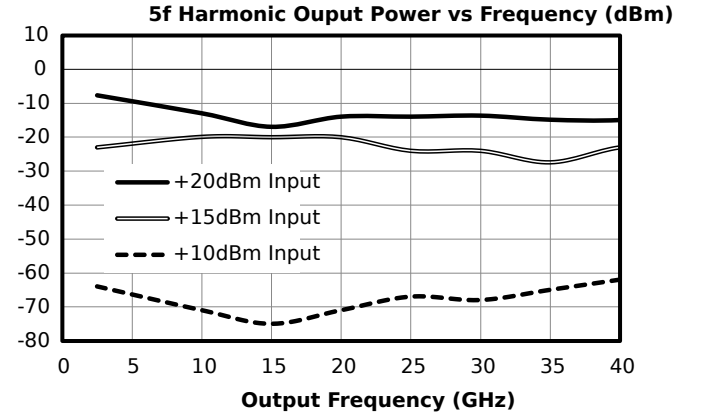


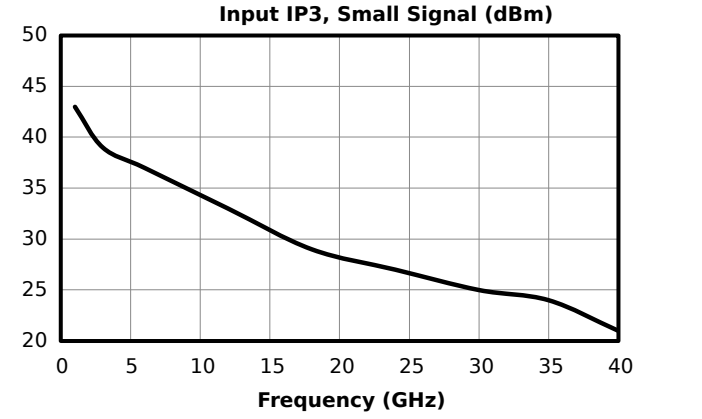


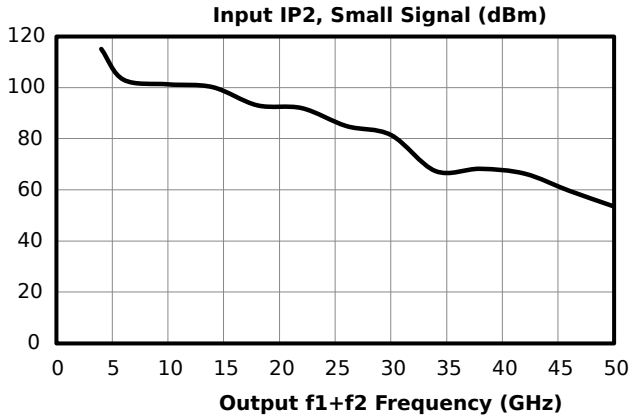












Application Information

Input Power at Observed Failure

Power handling specification is based on tests performed at different combinations of temperature and frequency. Input power was increased until catastrophic failure was observed. Results are shown in the following table. The power handling specification listed in section 3.1 is based on the worst observed power handling derated by 3dB.

Frequency	Maximum Average Power Handling		Unit
	at 25°C	at 85°C	
0.8 GHz	39	38	dBm
2.5 GHz	42	41	
6 GHz	40	39	

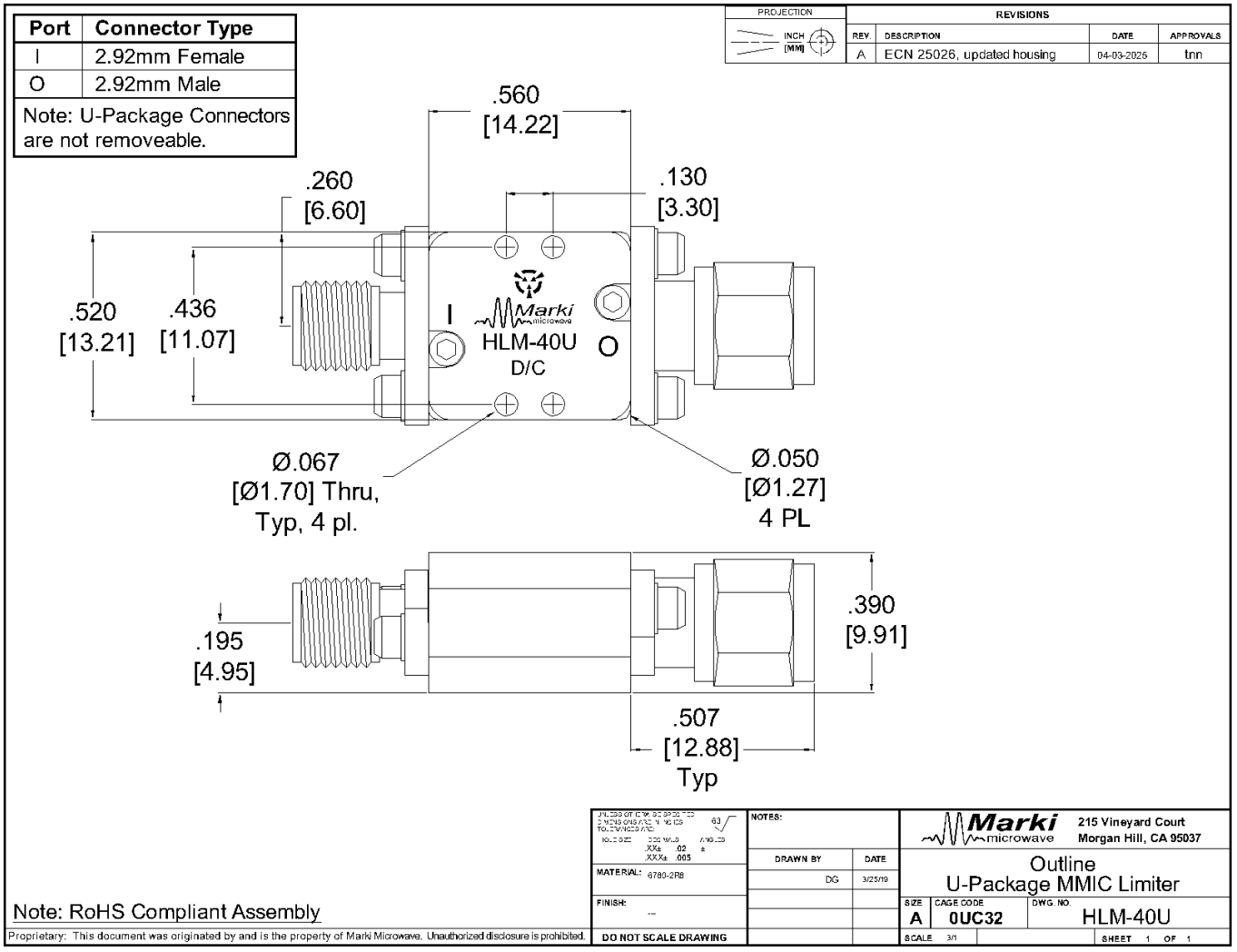
Frequency	Maximum Peak Power Handling[5]	Unit
2 GHz	35	W

Tested using a 1µs pulse, 1% duty cycle at 25°C

Mechanical Data

Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP



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