



PD57045 - PD57045S

RF POWER TRANSISTORS

The LdmoST FAMILY

PRELIMINARY DATA

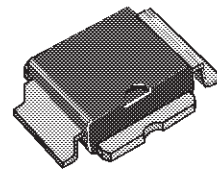
N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 45\text{ W}$ with 13 dB gain @ 945 MHz / 28V
- NEW RF PLASTIC PACKAGE

DESCRIPTION

The PD57045 is a common source N-Channel, enhancement-mode lateral Field-Effect RF power transistor. It is designed for high gain, broad band commercial and industrial applications. It operates at 28 V in common source mode at frequencies of up to 1 GHz. PD57045 boasts the excellent gain, linearity and reliability of ST's latest LDMOS technology mounted in the first true SMD plastic RF power package, PowerSO-10RF. PD57045's superior linearity performance makes it an ideal solution for base station applications.

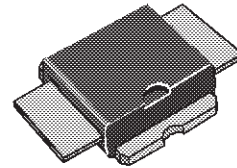
The PowerSO-10 plastic package, designed to offer high reliability, is the first ST JEDEC approved, high power SMD package. It has been specially optimized for RF needs and offers excellent RF performances and ease of assembly.



PowerSO-10RF
(formed lead)

ORDER CODE
PD57045

BRANDING
XPD57045



PowerSO-10RF
(Straight lead)

ORDER CODE
PD57045S

BRANDING
XPD57045S

ABSOLUTE MAXIMUM RATINGS ($T_{CASE} = 25^{\circ}\text{C}$)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-Source Voltage	65	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current	5	A
P_{DISS}	Power Dissipation (@ $T_c = 70^{\circ}\text{C}$)	73	W
T_J	Max. Operating Junction Temperature	165	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	-65 to +165	$^{\circ}\text{C}$

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	1.3	$^{\circ}\text{C/W}$
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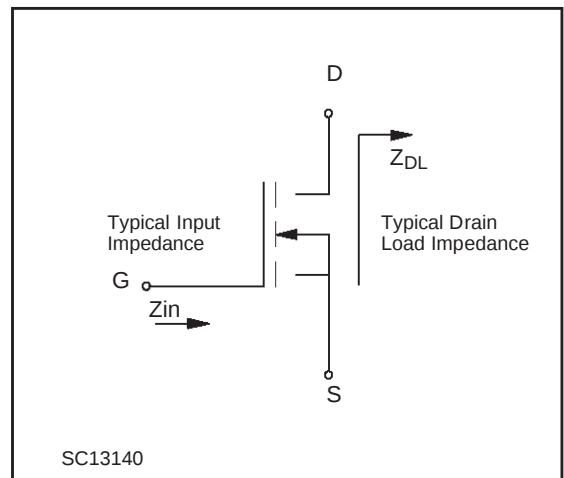
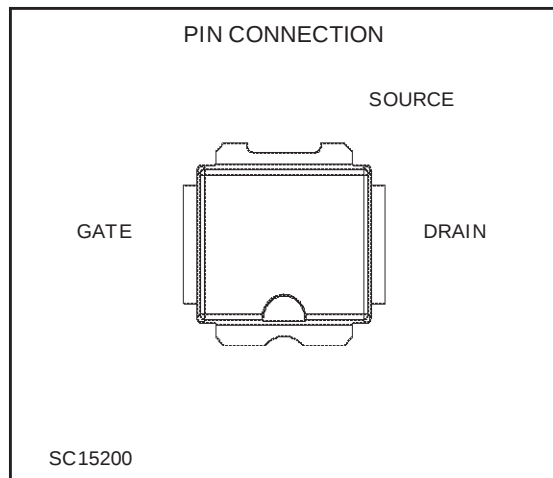
ELECTRICAL SPECIFICATION ($T_{CASE} = 25^{\circ}C$)

STATIC

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}$	$I_{DS} = 1\text{ mA}$	65			V
I_{DSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 28\text{ V}$			1	μA
I_{GSS}	$V_{GS} = 20\text{ V}$	$V_{DS} = 0\text{ V}$			1	μA
$V_{GS(Q)}$	$V_{DS} = 28\text{ V}$	$I_D = 250\text{ mA}$	2.0		5.0	V
$V_{DS(ON)}$	$V_{GS} = 10\text{ V}$	$I_D = 3\text{ A}$		0.7	0.9	V
g_{FS}	$V_{DS} = 10\text{ V}$	$I_D = 5\text{ A}$	2.0	2.7		mho
C_{ISS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 28\text{ V}$		86		pF
C_{OSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 28\text{ V}$		47		pF
C_{RSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 28\text{ V}$		3.6		pF

DYNAMIC

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
P_{1dB}	$V_{DD} = 28\text{ V}$	$I_{DQ} = 250\text{ mA}$ $f = 945\text{ MHz}$	45			W
G_P	$V_{DD} = 28\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 45\text{ W}$ $f = 945\text{ MHz}$	13	14.5		dB
η_D	$V_{DD} = 28\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 45\text{ W}$ $f = 945\text{ MHz}$	50			%
Load mismatch	$V_{DD} = 28\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 45\text{ W}$ $f = 945\text{ MHz}$ ALL PHASE ANGLES	10:1			VSWR



IMPEDANCE DATA

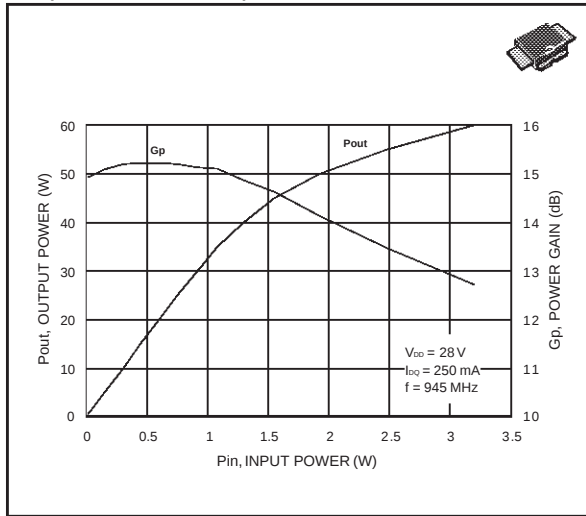
PD57045S

FREQ. MHz	$Z_{IN} (\Omega)$	$Z_{DL} (\Omega)$
925	$.71 + j\ 2.32$	$1.29 - j\ .35$
945	$.69 + j\ 2.92$	$1.25 - j\ .29$
960	$.55 + j\ 2.78$	$1.18 - j\ .83$

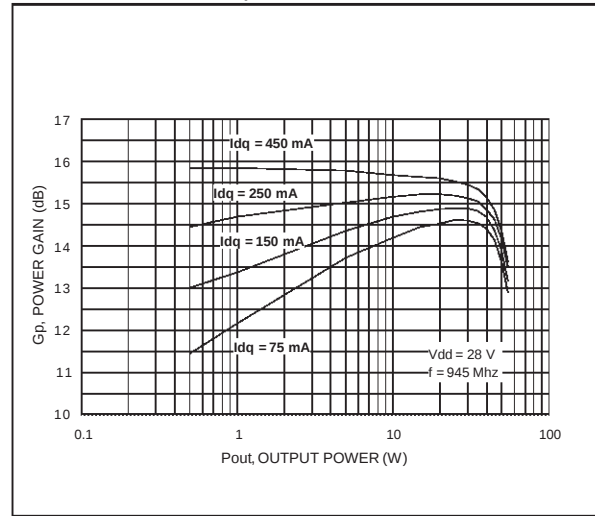
TYPICAL PERFORMANCE

Output Power vs. Input Power

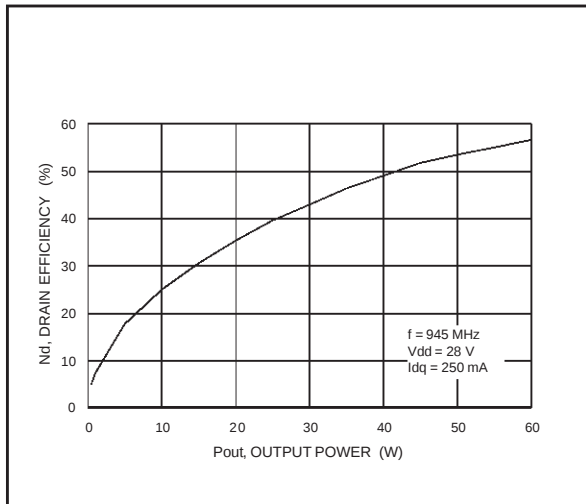
PD57045S



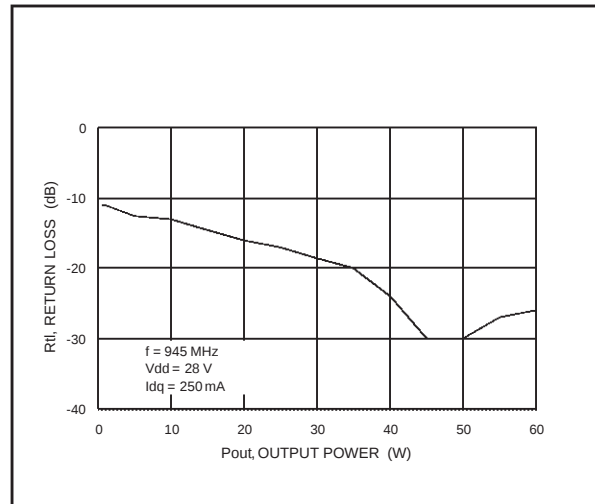
Power Gain vs. Output Power



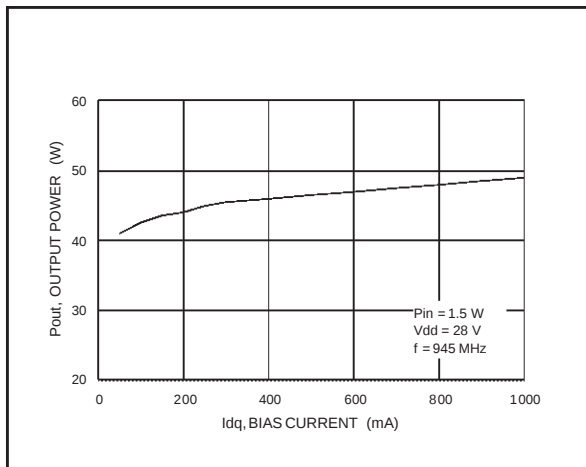
Drain Efficiency vs. Output Power



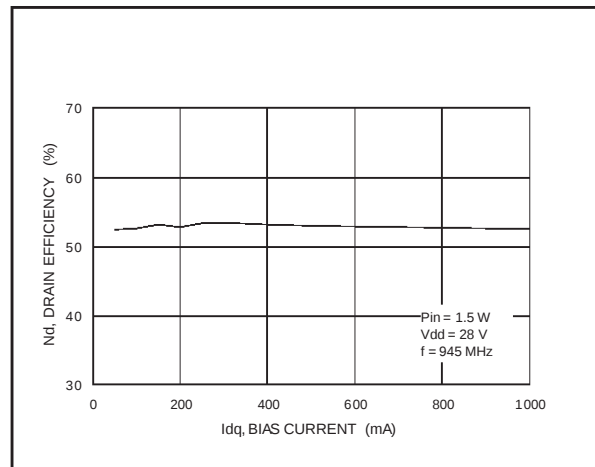
Return Loss vs. Output Power



Output Power vs. Bias Current



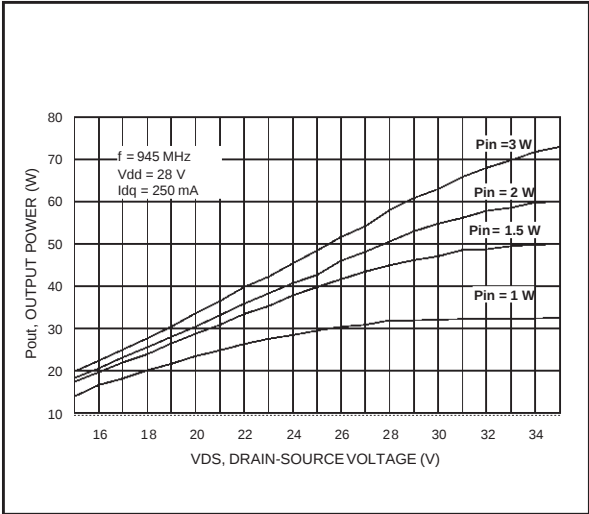
Drain Efficiency vs. Bias Current



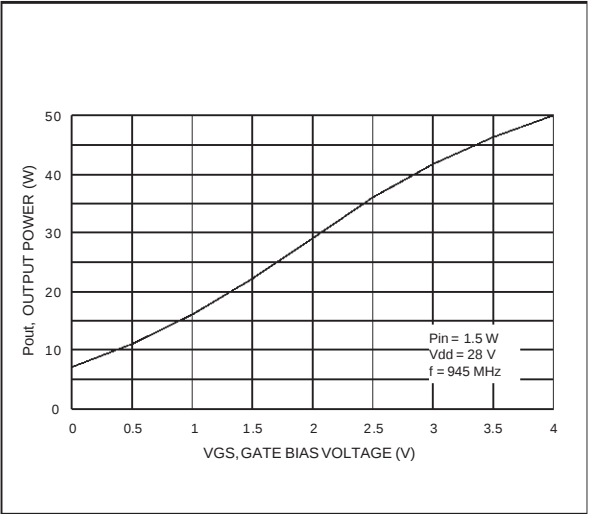
PD57045 - PD57045S

TYPICAL PERFORMANCE

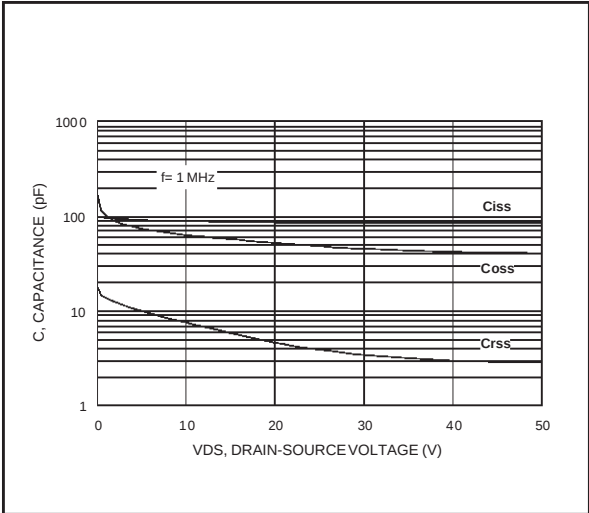
Output Power vs. Drain Voltage



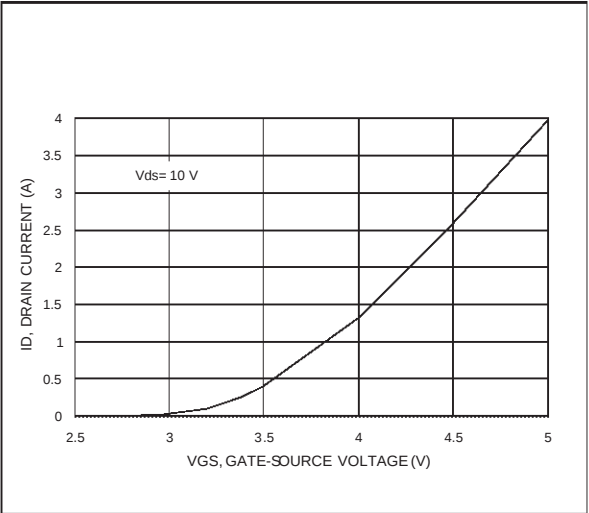
Output Power vs. Gate Bias Voltage



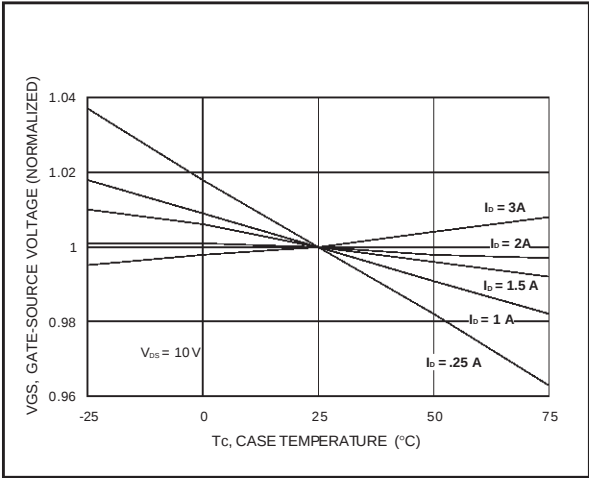
Capacitance vs. Drain Voltage



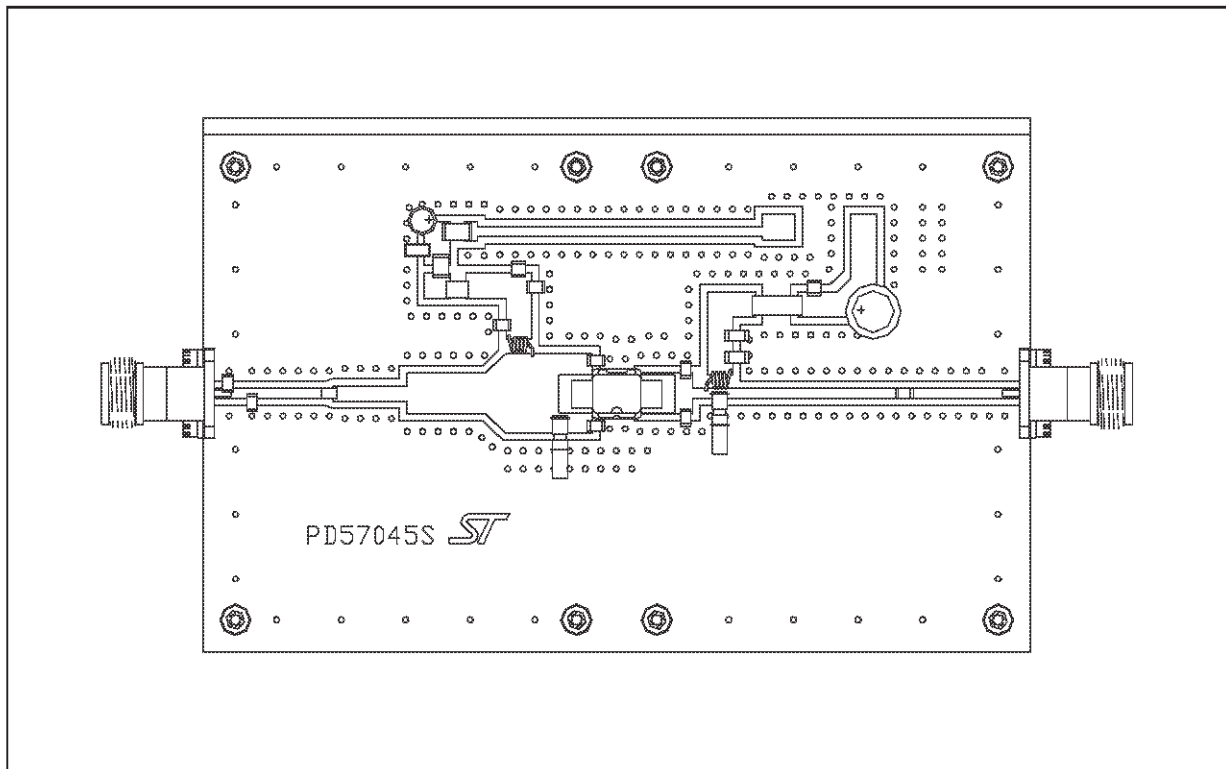
Drain Current vs. Gate Voltage



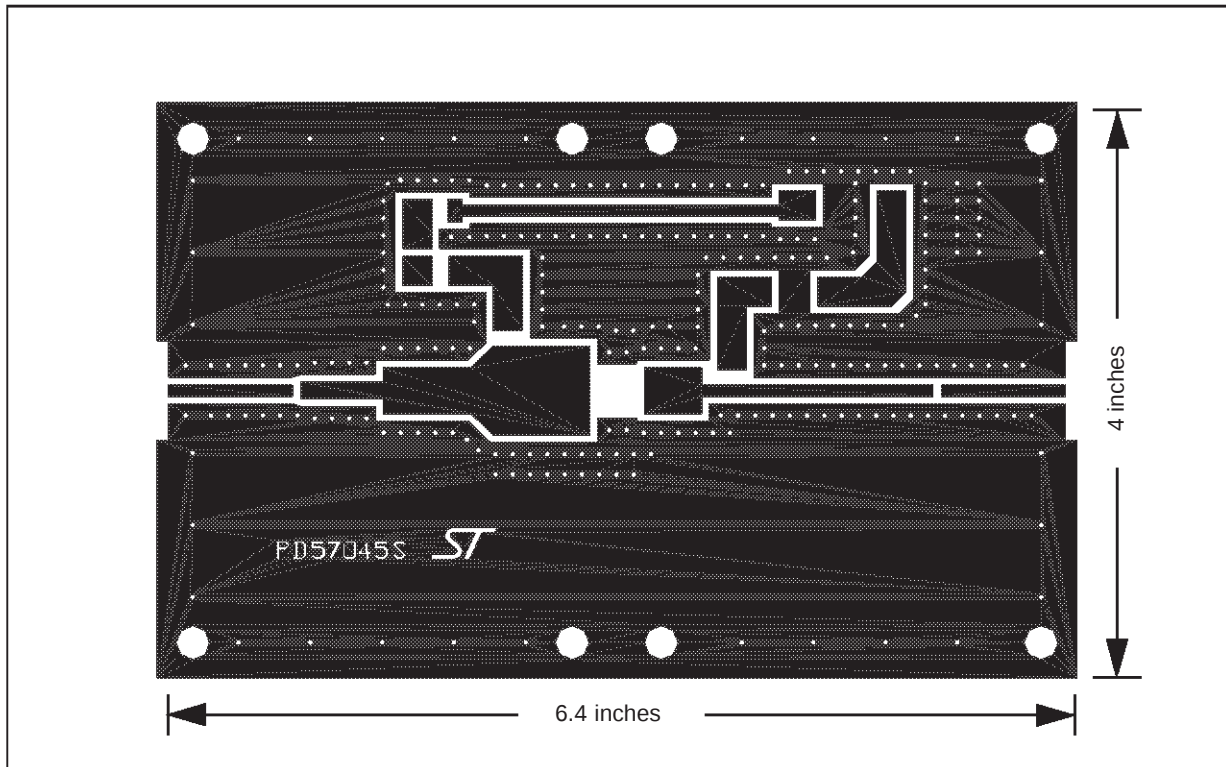
Gate-Source Voltage vs. Case Temperature



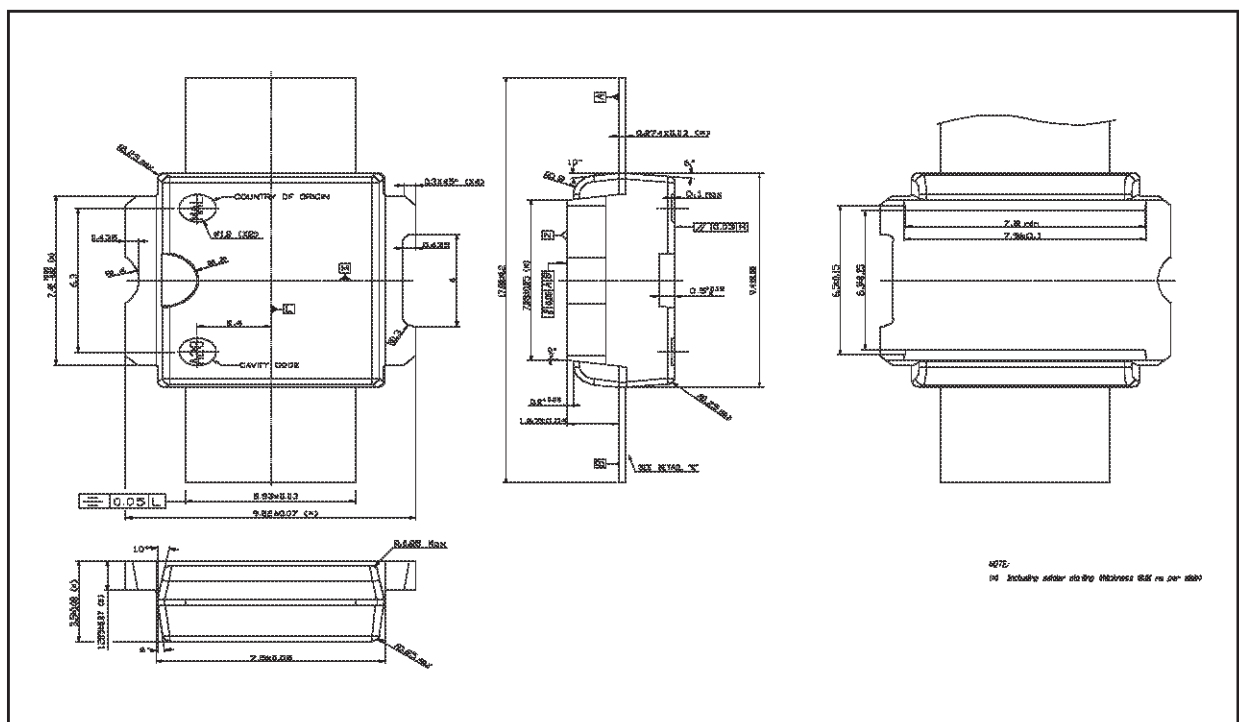
TEST CIRCUIT



TEST CIRCUIT PHOTOMASTER



7/8



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