



LET9060S

RF POWER TRANSISTORS

Ldmos Enhanced Technology in Plastic Package

PRELIMINARY DATA

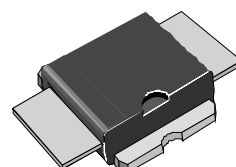
N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 60\text{ W}$ with 17 dB gain @ 945 MHz / 26V
- NEW RF PLASTIC PACKAGE
- HIGH GAIN
- ESD PROTECTION
- AVAILABLE IN TAPE & REEL with TR SUFFIX

DESCRIPTION

The LET9060S 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 26 V in common source mode at frequencies up to 1 GHz. LET9060S 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. LET9060S'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.

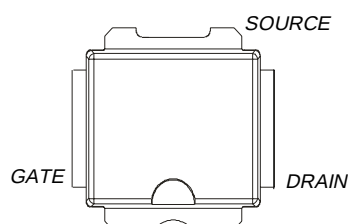


PowerSO-10RF
(straight lead)

ORDER CODE
LET9060S

BRANDING
LET9060S

PIN CONNECTION



Mounting recommendations are available in www.st.com/rfl (look for application note AN1294)

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

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-Source Voltage	65	V
V_{GS}	Gate-Source Voltage	-0.5 to +15	V
I_D	Drain Current	7	A
P_{DISS}	Power Dissipation	170	W
T_j	Max. Operating Junction Temperature	165	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	-65 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	0.7	$^{\circ}\text{C/W}$
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ELECTRICAL SPECIFICATION ($T_{CASE} = 25\text{ }^{\circ}\text{C}$)**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}	$V_{GS} = 0\text{ V}$	$V_{DS} = 26\text{ V}$			1	μA
I_{GSS}	$V_{GS} = 5\text{ V}$	$V_{DS} = 0\text{ V}$			1	μA
$V_{GS(Q)}$	$V_{DS} = 26\text{ V}$	$I_D = 100\text{ mA}$	2.0		5.0	V
$V_{DS(ON)}$	$V_{GS} = 10\text{ V}$	$I_D = 3\text{ A}$		0.7	0.8	V
G_{FS}	$V_{DS} = 10\text{ V}$	$I_D = 3\text{ A}$	2.5			mho
C_{ISS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 26\text{ V}$		74		pF
C_{OSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 26\text{ V}$		40		pF
C_{RSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 26\text{ V}$		2.8		pF

Ref. 7143417B

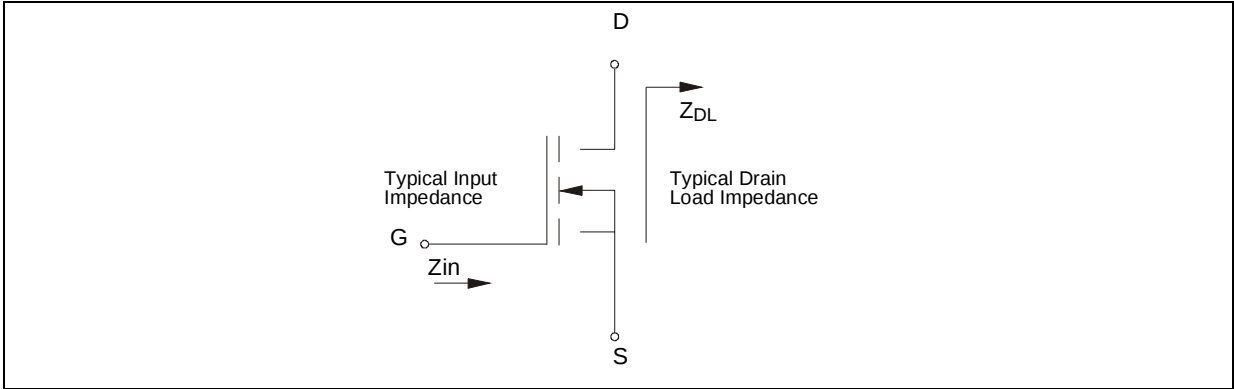
DYNAMIC ($f = 945\text{ MHz}$)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
G_P	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 60\text{ W PEP}$	17			dB
η_D	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 60\text{ W PEP}$		47		%
IMD3	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 60\text{ W PEP}$			-28	dBc
P_{1dB}	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$		70		W
G_P	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 60\text{ W}$		16.7		dB
η_D	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 60\text{ W}$		61		%
Load mismatch	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 60\text{ W}$ ALL PHASE ANGLES	10:1			VSWR

DYNAMIC ($f = 925 - 960\text{ MHz}$)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
P_{1dB}	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$		65		W
G_P	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 60\text{ W}$		16		dB
η_D	$V_{DD} = 26\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 60\text{ W}$		56		%

IMPEDANCE DATA



FREQ. MHz	$Z_{IN} (\Omega)$	$Z_{DL}(\Omega)$
860	0.65 - j 0.05	2.0 + j 0.1
880	0.75 - j 0.6	2.0 + j 0.1
900	0.9 - j 1.4	1.4 + j 0.2
920	0.4 - j 1.3	1.4 + j 0.5
940	0.4 - j 0.8	1.2 + j 0.3
960	0.5 - j 1.6	1.8 + j 1.0

ESD PROTECTION CHARACTERISTICS

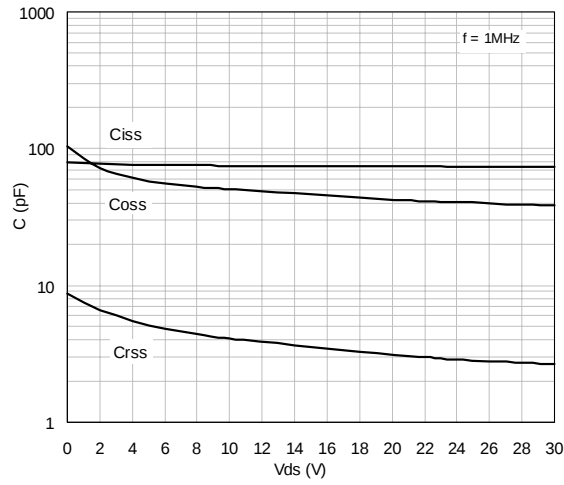
Test Conditions	Class
Human Body Model	2
Machine Model	M3

MOISTURE SENSITIVITY LEVEL

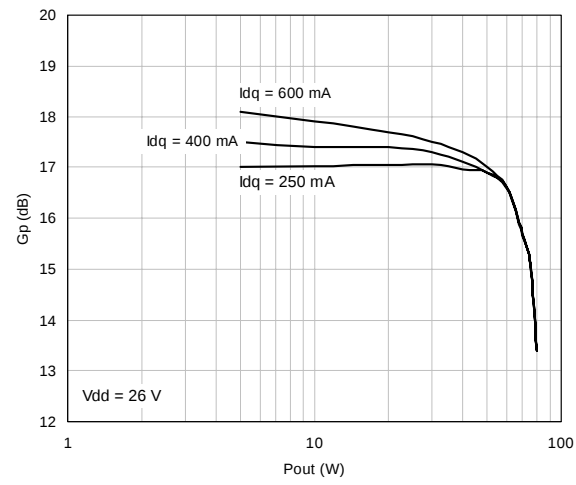
Test Methodology	Rating
J-STD-020B	MSL 3

TYPICAL PERFORMANCE

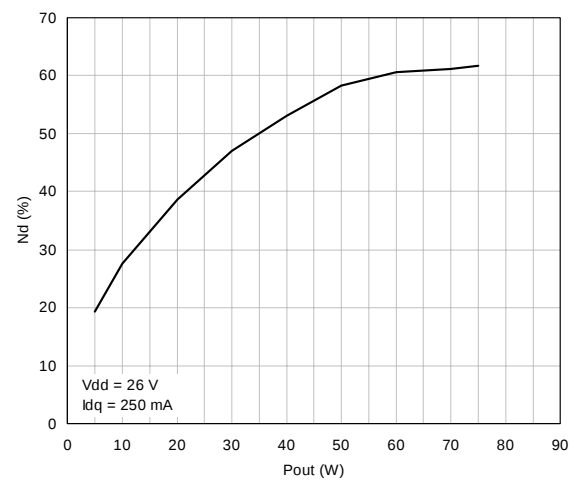
Power Gain Vs Output Power



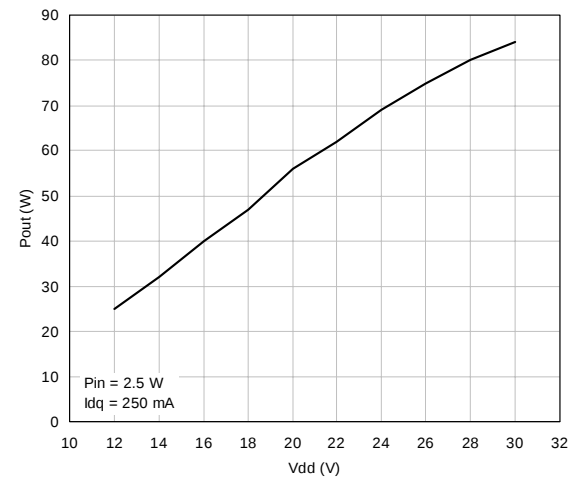
Power Gain Vs Output Power



Efficiency Vs Output Power

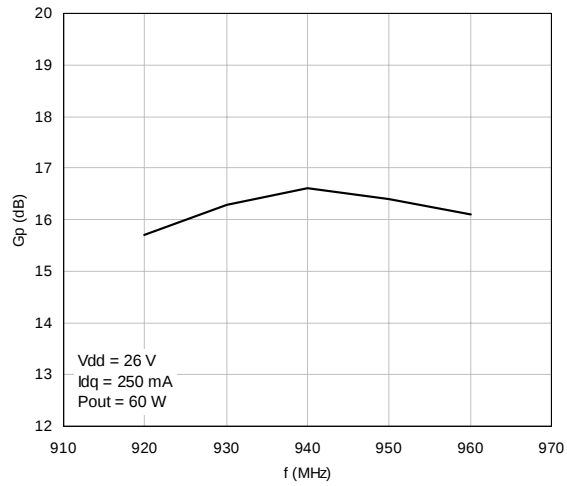


Output Power Vs Drain Voltage

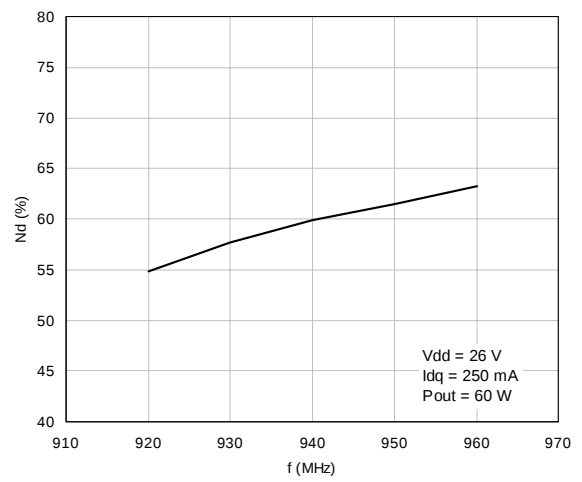


TYPICAL PERFORMANCE (BROADBAND)

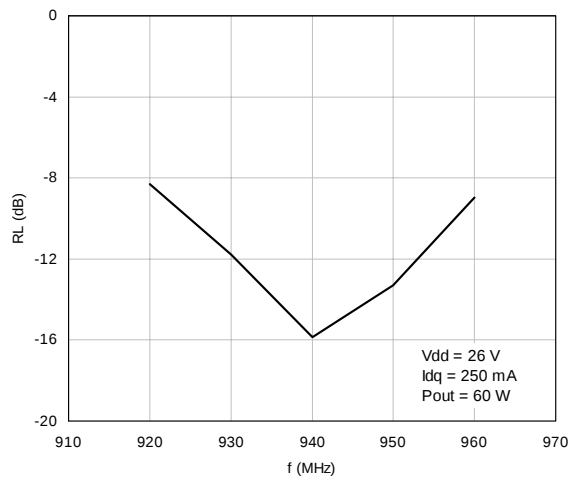
Power Gain Vs Frequency



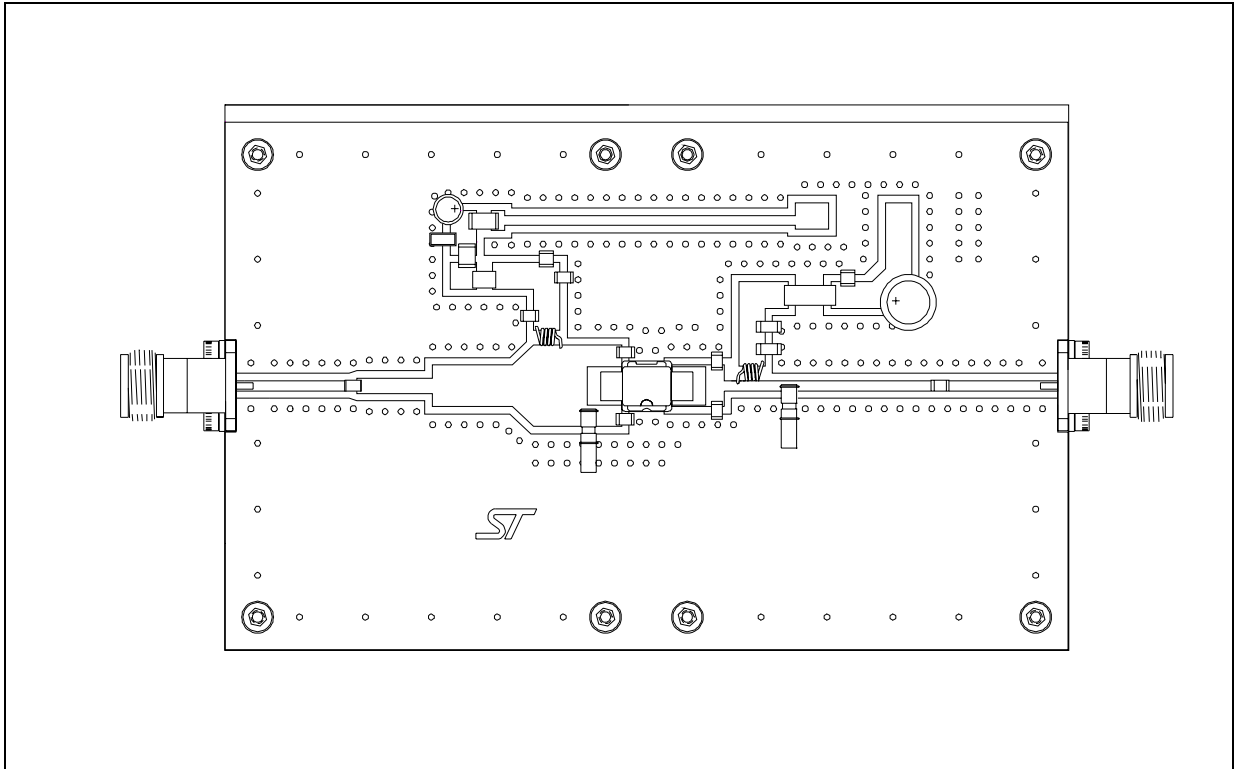
Efficiency Vs Frequency



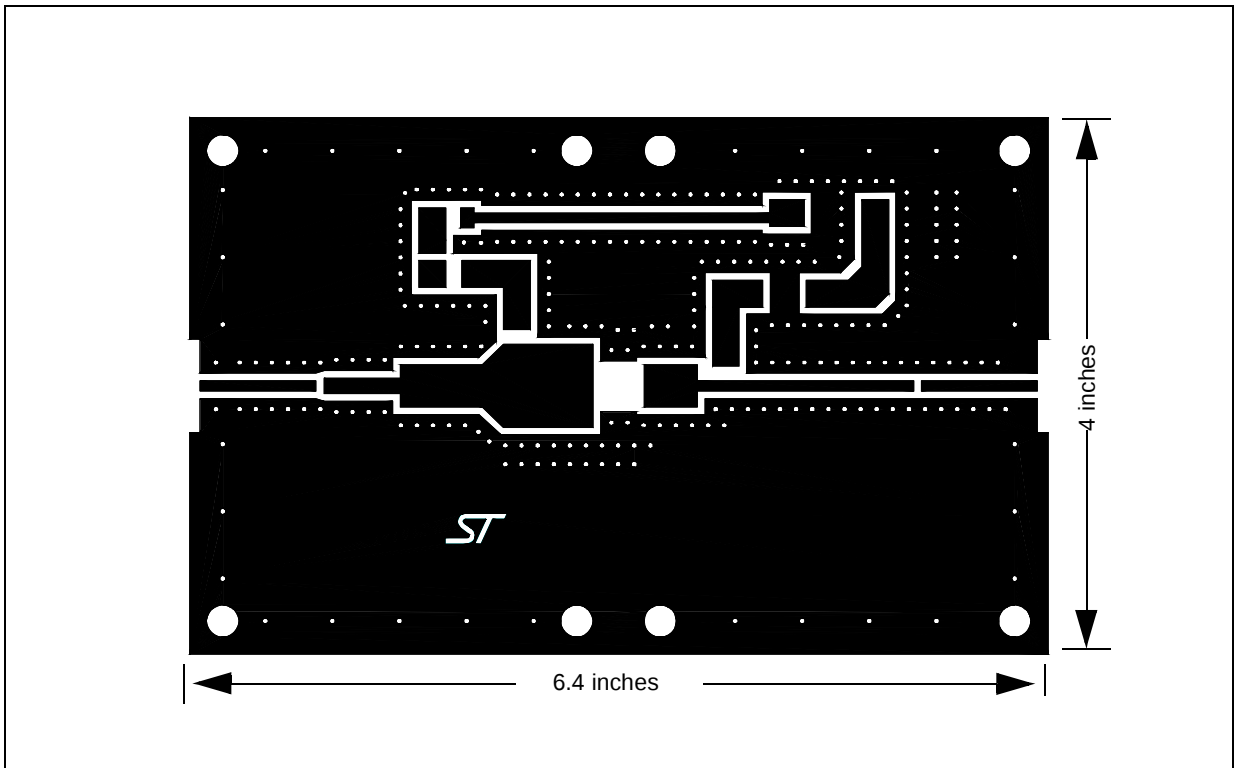
Input Return Loss Vs Frequency



TEST CIRCUIT

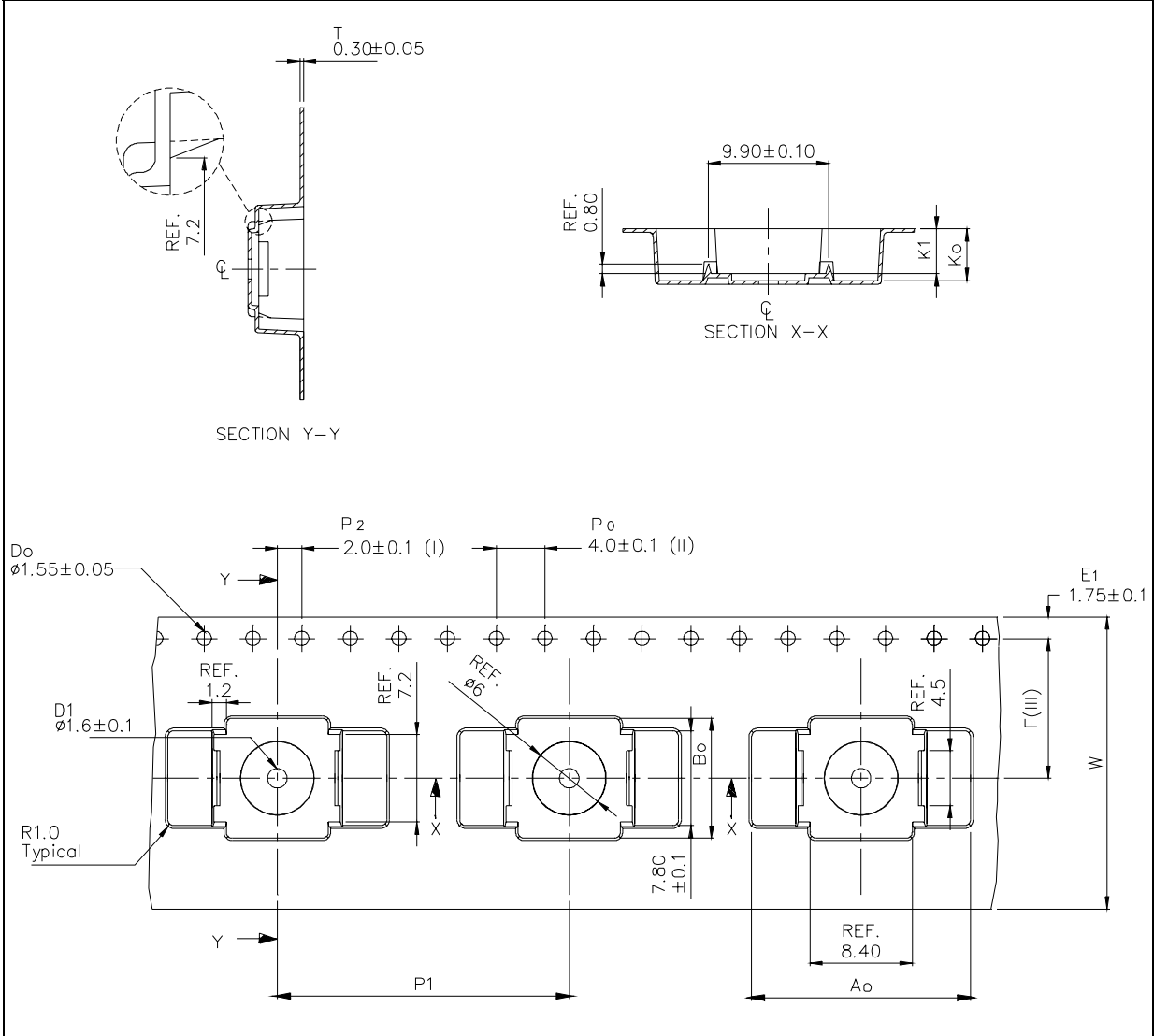


TEST CIRCUIT PHOTOMASTER



TAPE & REEL DIMENSIONS

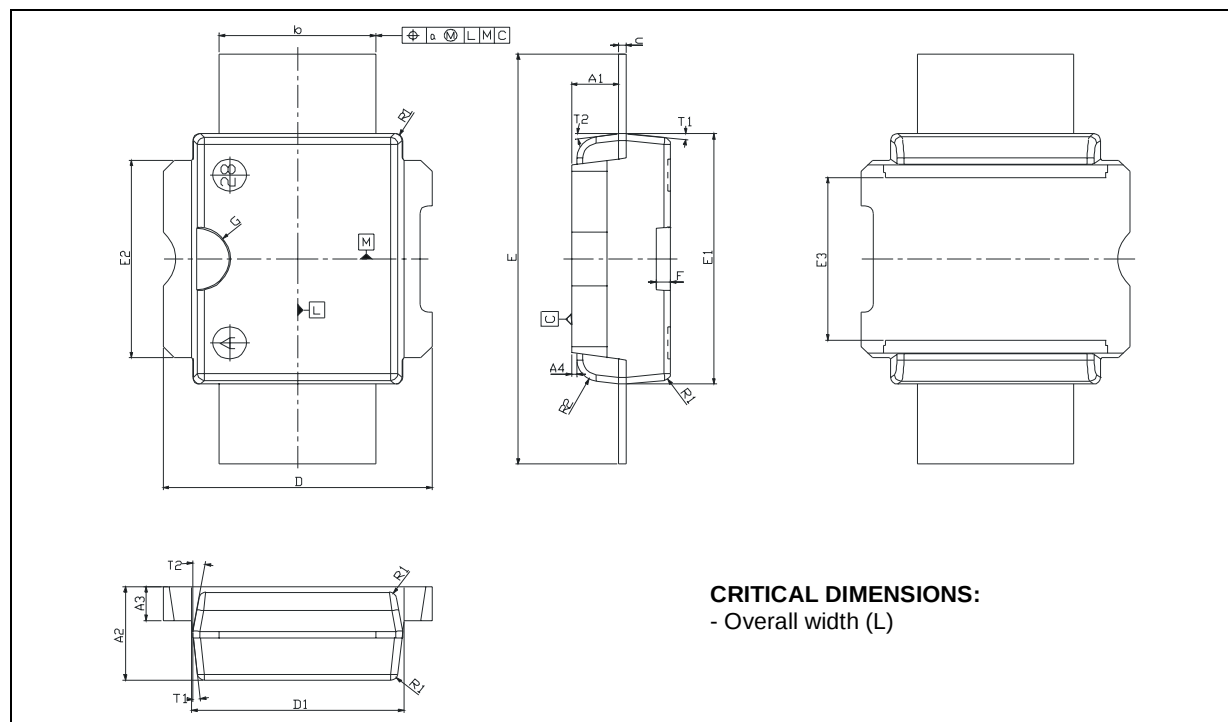
	mm		
	MIN.	TYP.	MAX
Ao	17.9	18.0	18.1
Bo	9.7	9.8	9.9
Ko	4.15	4.25	4.35
K1	3.6	3.7	3.8
F	11.4	11.5	11.6
P1	23.9	24.0	24.1
W	23.7	24.0	24.3



PowerSO-10RF Straight Lead MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A1	1.62	1.67	1.72	0.064	0.065	0.068
A2	3.4	3.5	3.6	0.134	0.137	0.142
A3	1.2	1.3	1.4	0.046	0.05	0.054
A4	0.15	0.2	0.25	0.005	0.007	0.009
a		0.2			0.007	
b	5.4	5.53	5.65	0.212	0.217	0.221
c	0.23	0.27	0.32	0.008	0.01	0.012
D	9.4	9.5	9.6	0.370	0.374	0.377
D1	7.4	7.5	7.6	0.290	0.295	0.298
E	15.15	15.4	15.65	0.595	0.606	0.615
E1	9.3	9.4	9.5	0.365	0.37	0.375
E2	7.3	7.4	7.5	0.286	0.292	0.294
E3	5.9	6.1	6.3	0.231	0.24	0.247
F		0.5			0.019	
G		1.2			0.047	
R1			0.25			0.01
R2		0.8			0.031	
T1		6 deg			6 deg	
T2		10 deg			10 deg	

Note (1): Resin protrusions not included (max value: 0.15 mm per side)



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