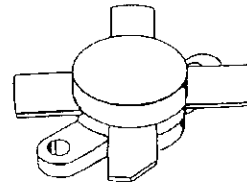


## RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

- OPTIMIZED FOR SSB
- 30 MHz
- 50 VOLTS
- IMD – 30 dB
- GOLD METALLIZATION
- COMMON EMITTER
- $P_{OUT} = 250\text{ W PEP WITH } 14.5\text{ dB GAIN}$

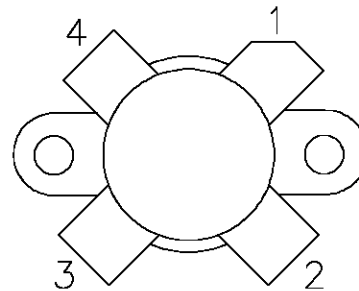


**.550 4LFL (M177)**  
epoxy sealed

**ORDER CODE**  
SD1728

**BRANDING**  
TH430

### PIN CONNECTION



- |              |            |
|--------------|------------|
| 1. Collector | 3. Base    |
| 2. Emitter   | 4. Emitter |

### DESCRIPTION

The SD1728 is a 50 V epitaxial silicon NPN planar transistor designed primarily for SSB and VHF communications. This device utilizes emitter ballasting for improved ruggedness and reliability.

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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	110	V
$V_{CEO}$	Collector-Emitter Voltage	55	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Device Current	40	A
$P_{DISS}$	Power Dissipation	330	W
$T_J$	Junction Temperature	+200	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature	– 65 to +150	$^{\circ}\text{C}$

### THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.4	$^{\circ}\text{C/W}$
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## SD1728 (TH430)

### ELECTRICAL SPECIFICATIONS ( $T_{\text{case}} = 25^{\circ}\text{C}$ )

#### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$BV_{\text{CES}}$	$I_{\text{C}} = 200\text{mA}$	$V_{\text{BE}} = 0\text{V}$	110	—	—	V
$BV_{\text{CEO}}$	$I_{\text{C}} = 200\text{mA}$	$I_{\text{B}} = 0\text{mA}$	55	—	—	V
$BV_{\text{EBO}}$	$I_{\text{E}} = 20\text{mA}$	$I_{\text{C}} = 0\text{mA}$	4.0	—	—	V
$I_{\text{CEO}}$	$V_{\text{CE}} = 30\text{V}$	$I_{\text{E}} = 0\text{mA}$	—	—	10	mA
$I_{\text{CES}}$	$V_{\text{CE}} = 60\text{V}$	$I_{\text{E}} = 0\text{mA}$	—	—	10	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 6\text{V}$	$I_{\text{C}} = 10\text{A}$	15	—	45	—

#### DYNAMIC

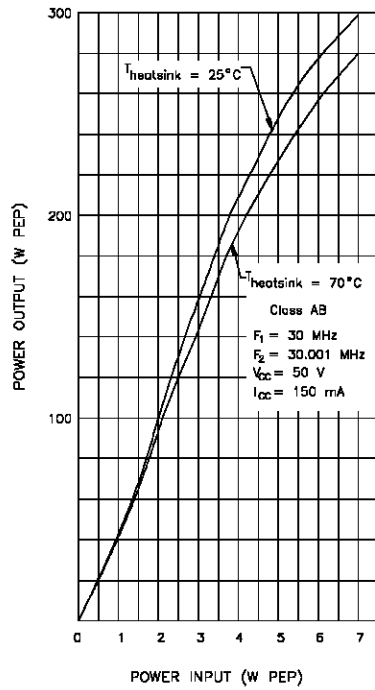
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$P_{\text{OUT}}$	$f = 30\text{ MHz}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	250	—	—	W
$G_{\text{P}}^*$	$P_{\text{OUT}} = 250\text{ W PEP}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	14.5	—	—	dB
$\text{IMD}^*$	$P_{\text{OUT}} = 250\text{ W PEP}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	—	—	-30	dBc
$\eta_{\text{C}}^*$	$P_{\text{OUT}} = 250\text{ W PEP}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	37	—	—	%
$C_{\text{OB}}$	$f = 1\text{ MHz}$	$V_{\text{CB}} = 50\text{ V}$		—	—	360	pF

Note: \* Two Tone Method;  $f_1 = 30.00\text{ MHz}$ ;  $f_2 = 30.001\text{ MHz}$   
In Class C:  $G_{\text{P}}$  Min. 13.5 dB, Efficiency 65% @ 30MHz  
 $G_{\text{P}}$  Min. 10 dB, Efficiency 57% @ 70MHz

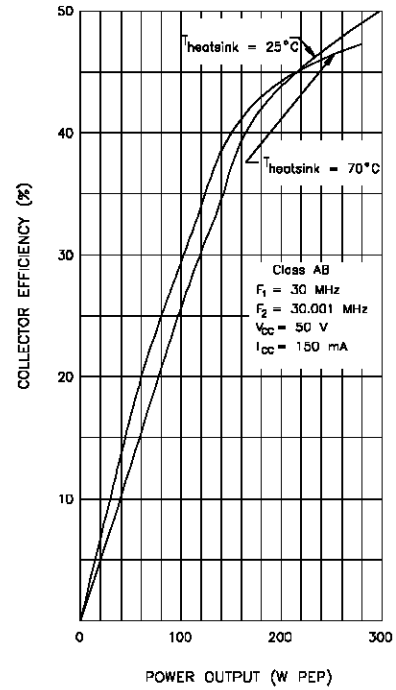
## TYPICAL PERFORMANCE

## CLASS AB

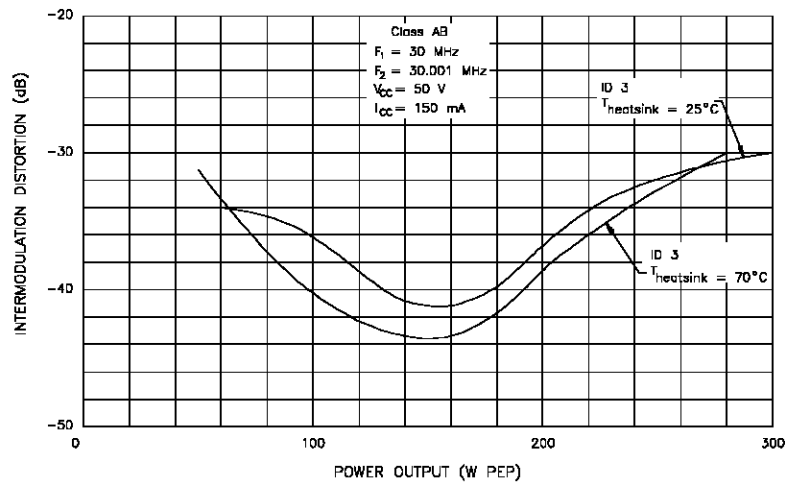
POWER OUTPUT PEP vs POWER INPUT



COLLECTOR EFFICIENCY vs POWER OUTPUT PEP

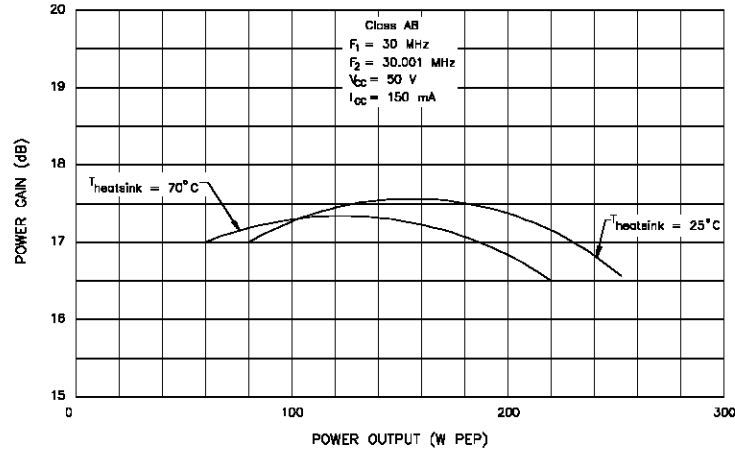


INTERMODULATION DISTORTION vs POWER OUTPUT PEP

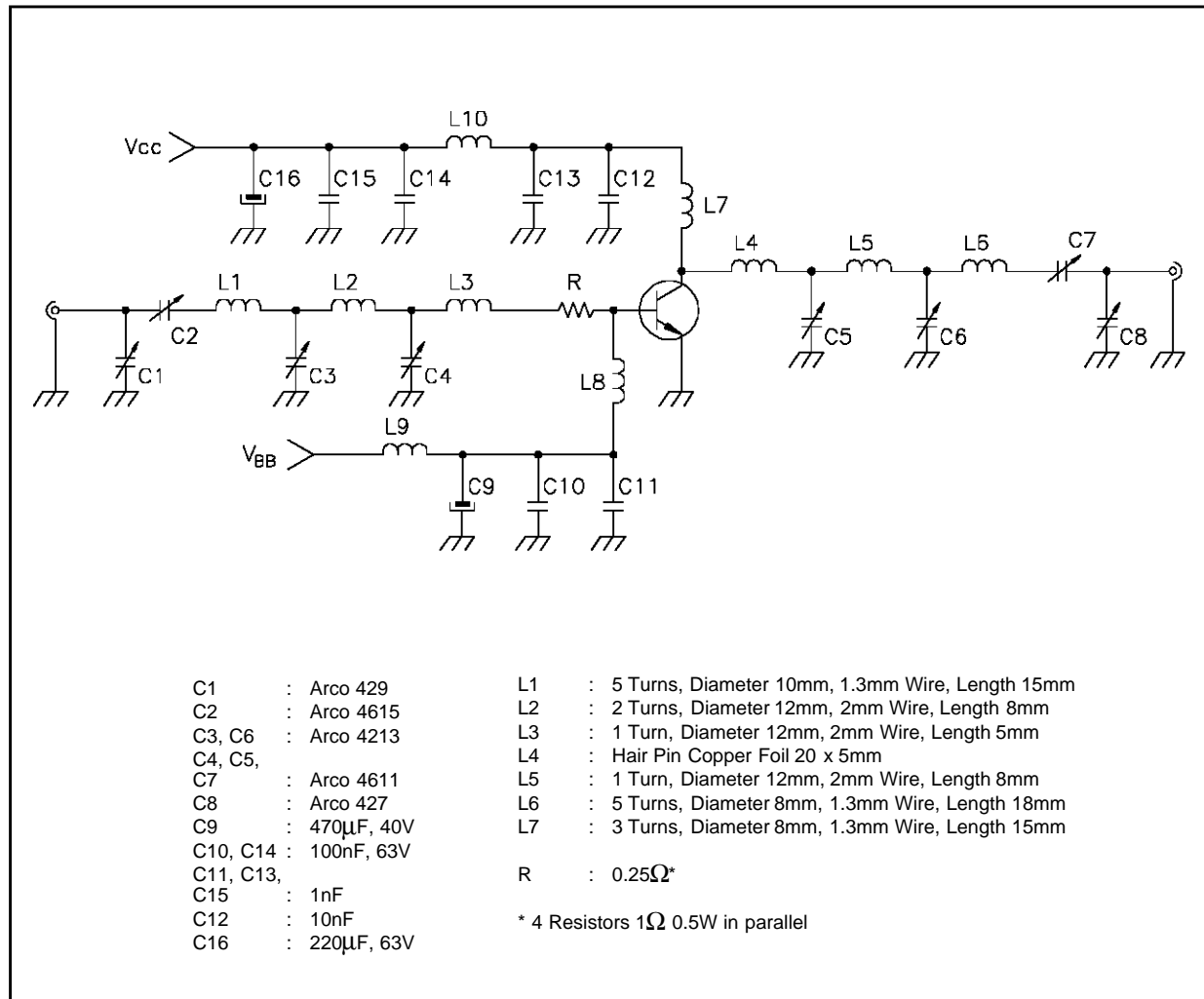


## TYPICAL PERFORMANCE (cont'd)

POWER GAIN vs POWER OUTPUT PEP



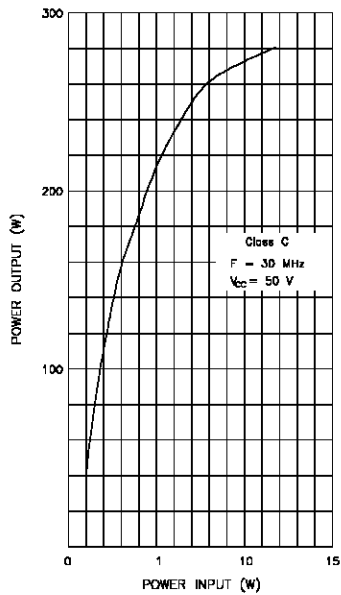
## TEST CIRCUIT SSB - CLASS AB - 30 MHz



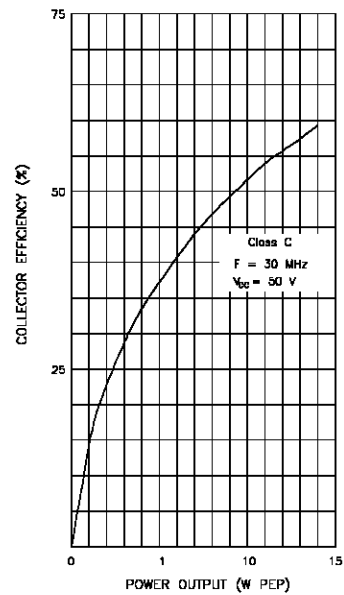
## TYPICAL PERFORMANCE

CLASS C  $F = 30 \text{ MHz}$ 

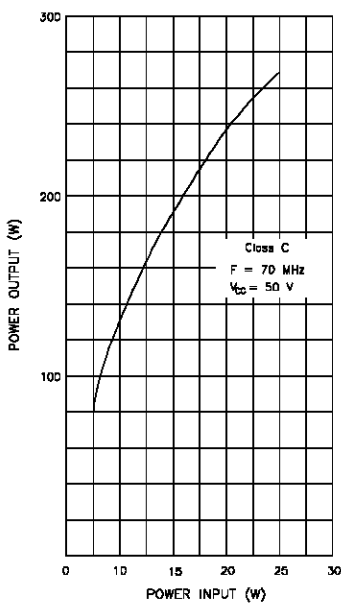
POWER OUTPUT vs POWER INPUT



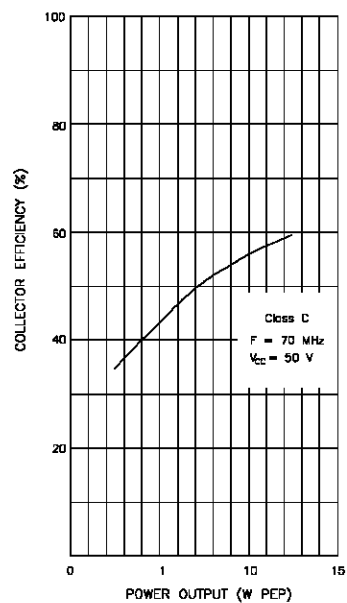
COLLECTOR EFFICIENCY vs POWER OUTPUT

CLASS C  $F = 70 \text{ MHz}$ 

POWER OUTPUT vs POWER INPUT



COLLECTOR EFFICIENCY vs POWER OUTPUT

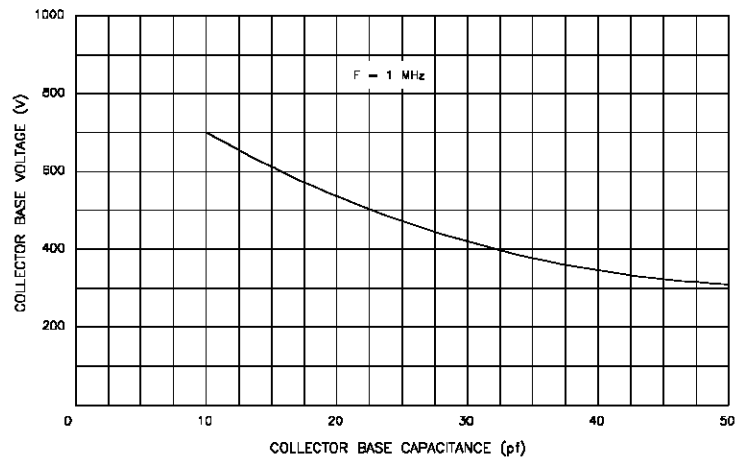


TYPICAL PERFORMANCE (cont'd)

COLLECTOR BASE CAPACITANCE vs COLLECTOR BASE VOLTAGE



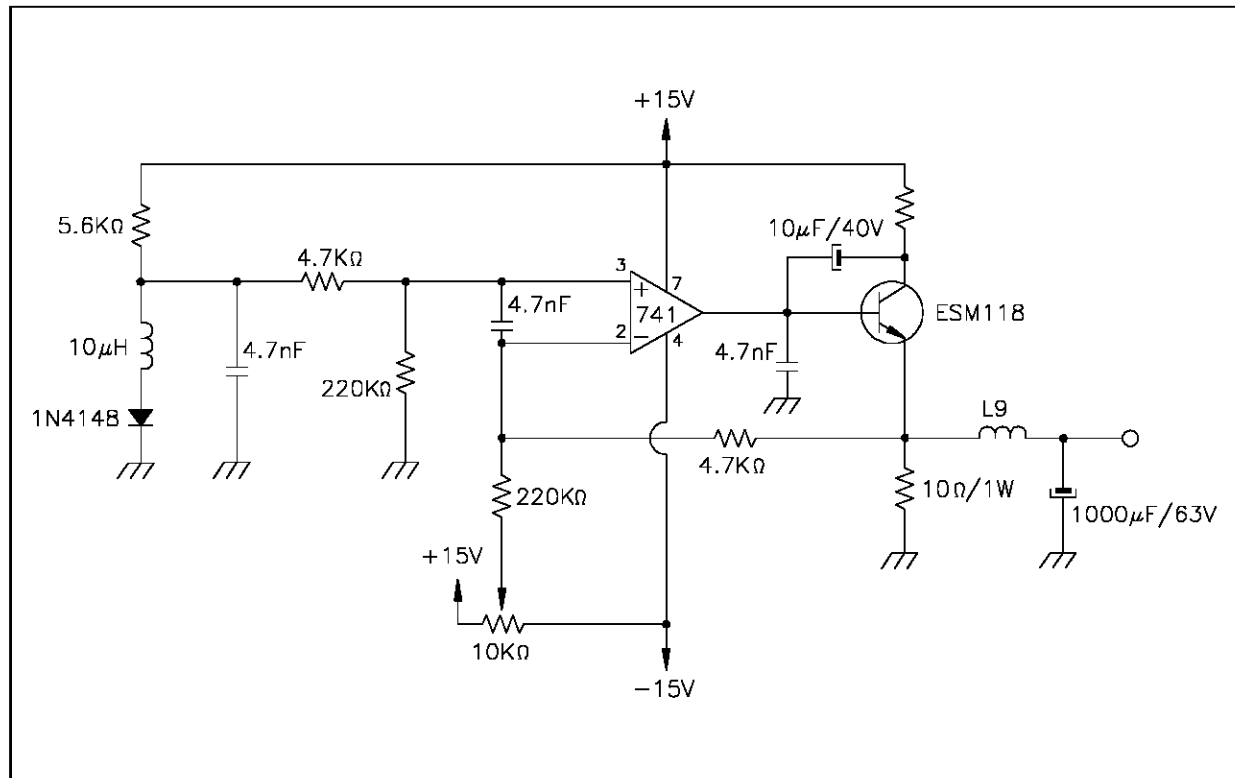
DC SAFE OPERATING AREA



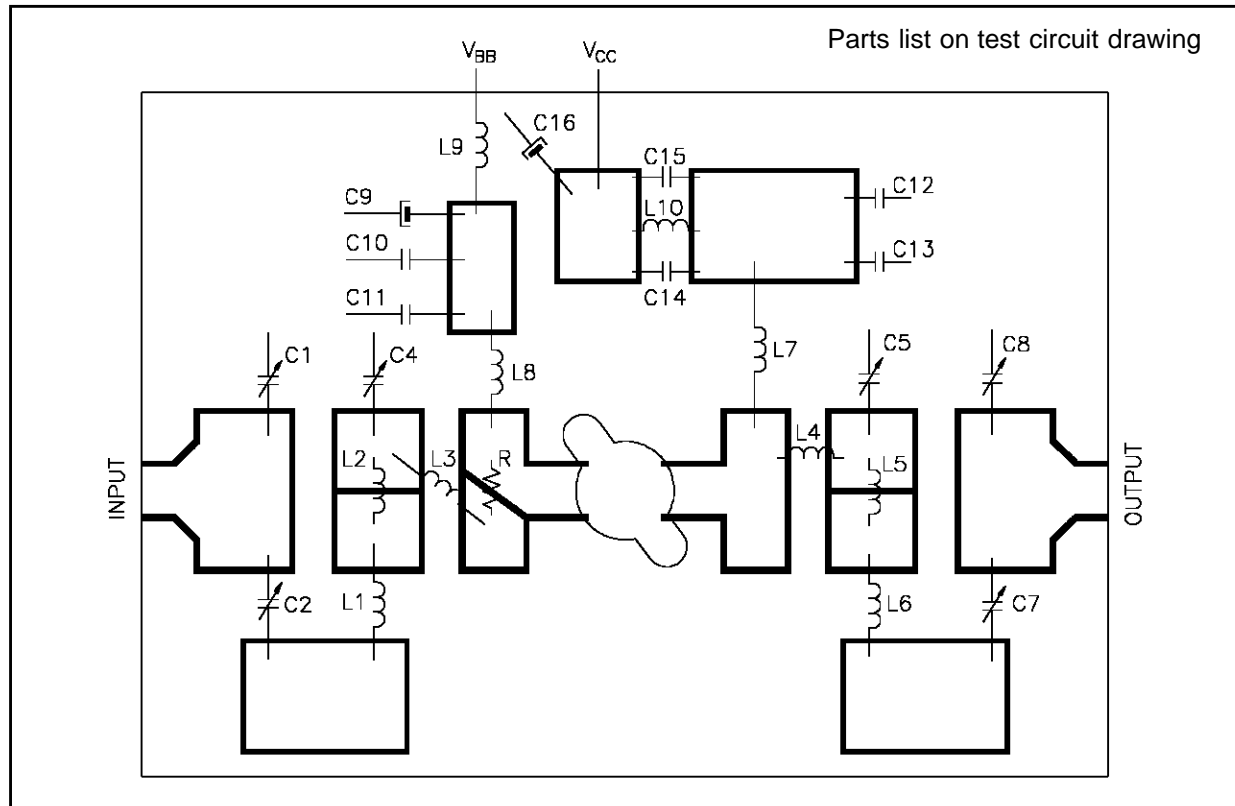


## SD1728 (TH430)

### BIAS CIRCUIT



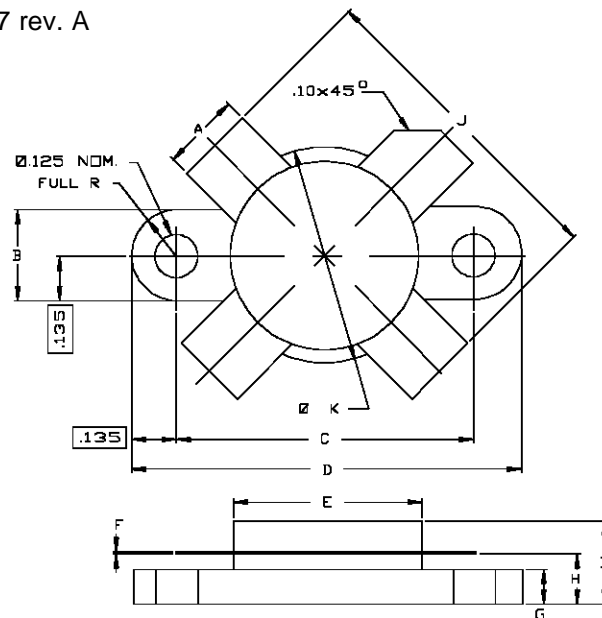
### MOUNTING CIRCUIT





## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0177 rev. A



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.225/5,72	.235/5,97	K	.625/15,88	.635/16,13
B	.265/6,73	.275/6,96			
C	.860/21,84	.870/22,10			
D	1.130/28,70	1.140/28,96			
E	.545/13,84	.555/14,10			
F	.003/0,08	.007/0,18			
G	.100/2,54	.118/3,00			
H	.150/3,81	.170/4,32			
I		.280/7,11			
J	1.080/27,43	1.120/28,45			

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