

TIM7785-30SL

FEATURES:

- LOW INTERMODULATION DISTORTION
IM₃ = -45 dBc at P_o = 34.5 dBm,
Single Carrier Level
- HIGH POWER
P_{1dB} = 45 dBm at 7.7 GHz to 8.5 GHz
- HIGH EFFICIENCY
 η_{add} = 34 % at 7.7 GHz to 8.5 GHz
- HIGH GAIN
G_{1dB} = 6.0dB at 7.7 GHz to 8.5 GHz
- BROAD BAND INTERNALLY MATCHED
- HERMETICALLY SEALED PACKAGE

RF PERFORMANCE SPECIFICATIONS (T_a = 25°C)

CHARACTERISITCS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1 dB Compres- sion Point	P _{1dB}	V _{DS} = 10V f = 7.7~8.5GHz	dBm	44.0	45.0	-
Power Gain at 1 dB Compression Point	G _{1dB}		dB	5.0	6.0	-
Drain Current	I _{DS}		A	-	7.0	8.0
Power Added Efficiency	η_{add}		%	-	34	-
3rd Order Intermodulation Distortion	IM ₃	Note 1	dBc	-42	-45	-
Channel Temperature Rise	ΔT_{ch}	V _{DS} × I _{DS} × R _{th(c-c)}	°C	-	-	100

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

CHARACTERISITCS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans- conductance	gm	V _{DS} = 3V I _{DS} = 10A	mS	-	6300	-
Pinch-off Voltage	V _{GSoff}	V _{DS} = 3V I _{DS} = 100mA	V	-1.0	-2.5	-4.0
Saturated Drain Current	I _{DSS}	V _{DS} = 3V V _{GS} = 0V	A	-	18	22
Gate-Source Breakdown Voltage	V _{GS0}	I _{GS} = -350 μ A	V	-5	-	-
Thermal Resistance	R _{th(c-c)}	Channel to Case	°C/W	-	1.0	1.3

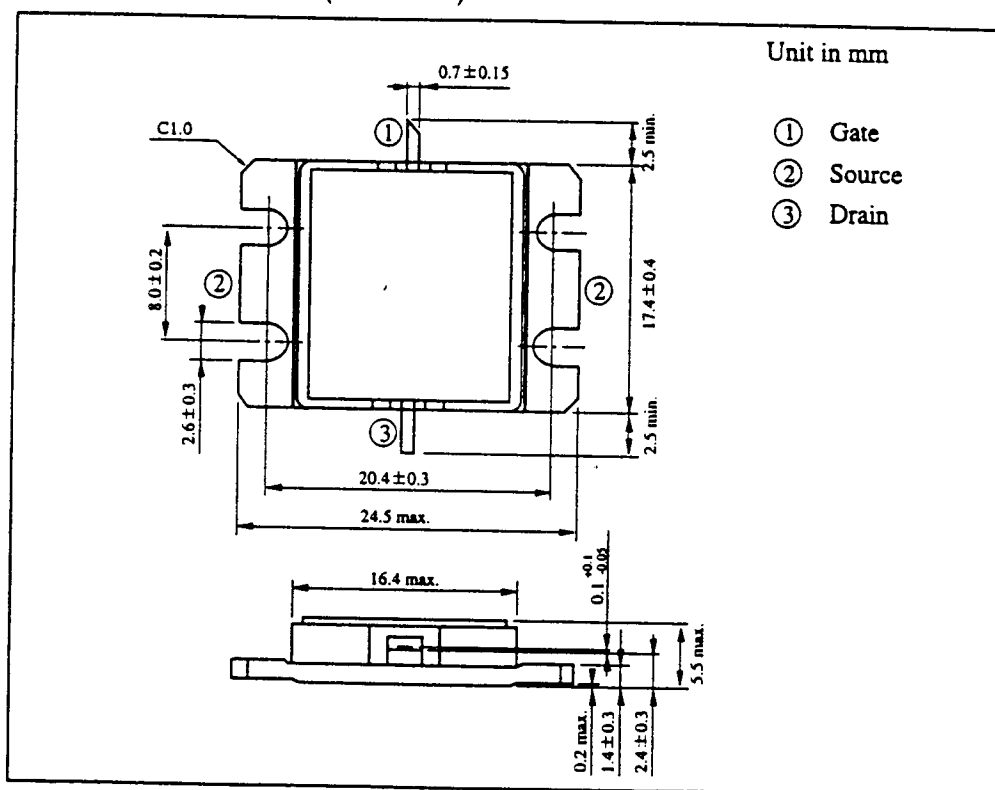
Note 1: 2 tone Test Pout = 34.5dBm Single Carrier Level.

Recommended Gate Resistance(R_g) : R_g = R_{g1}(10 Ω) + R_{g2}(18 Ω) = 28 Ω (MAX.)

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

CHARACTERISTIC	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	22
Total Power Dissipation ($T_c = 25^\circ\text{C}$)	P_T	W	115
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65~175

PACKAGE OUTLINE (2-16G1B)

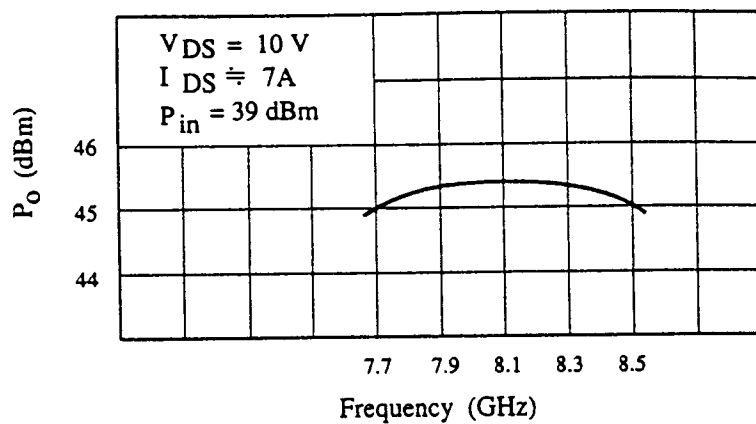


HANDLING PRECAUTIONS FOR PACKAGED TYPE

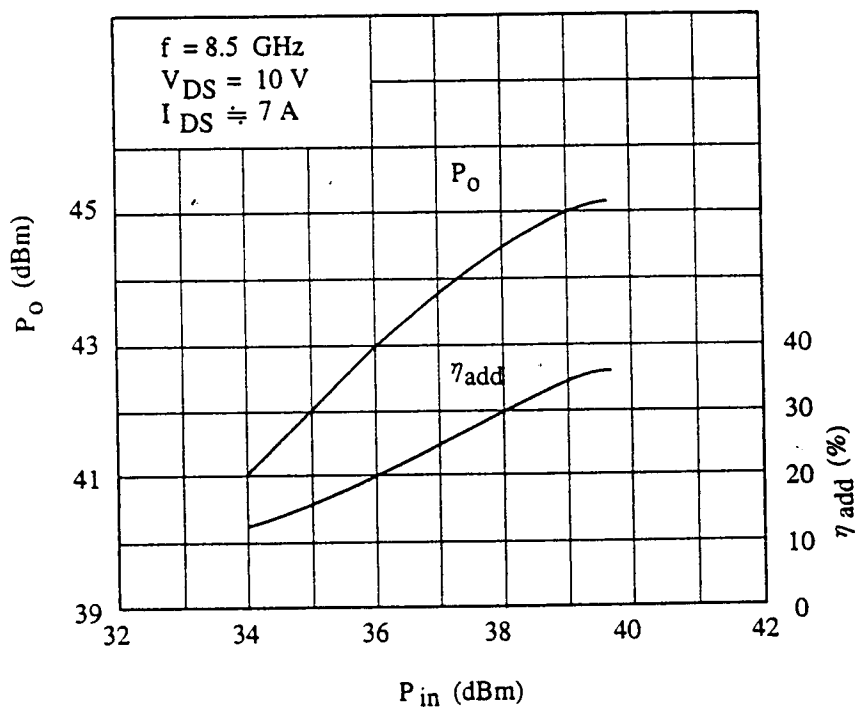
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C .

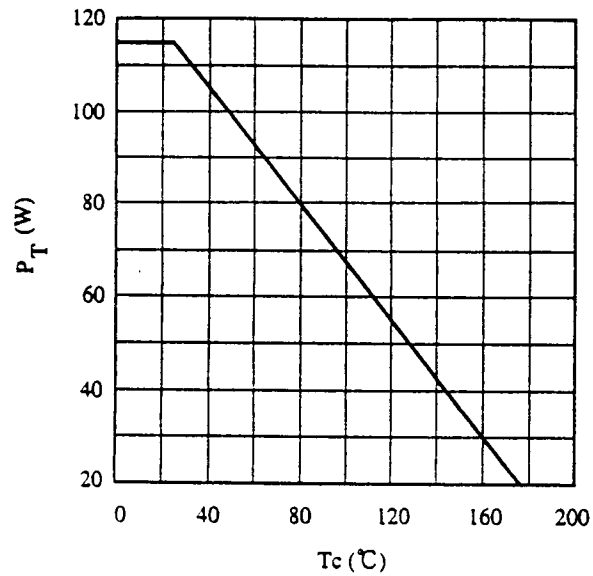
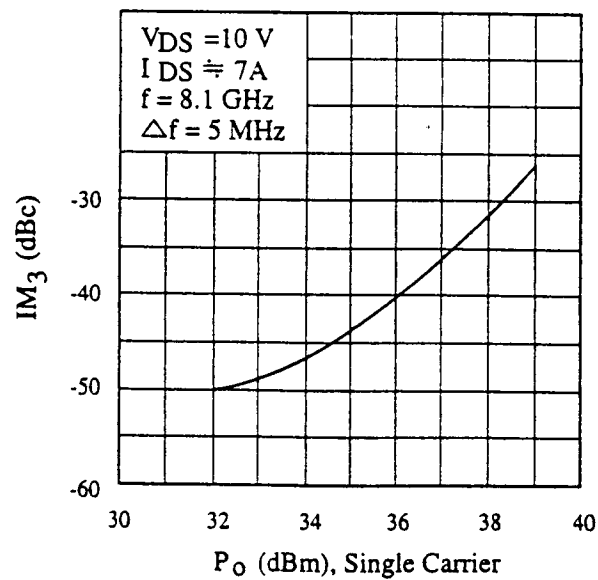
RF PERFORMANCES

Output Power vs. Frequency



Output Power vs. Input Power



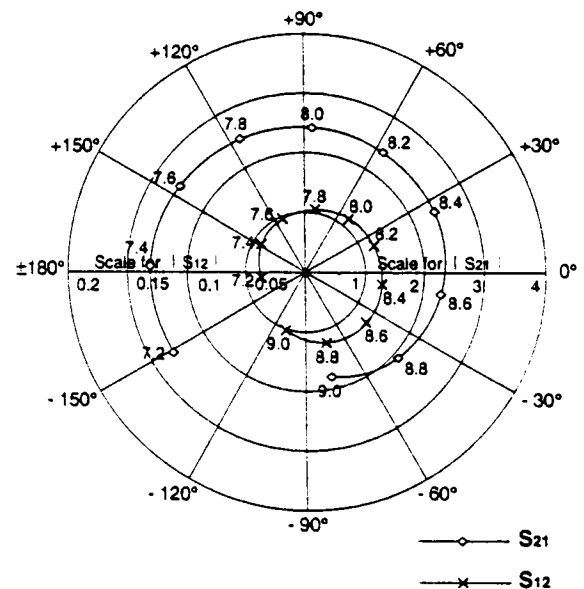
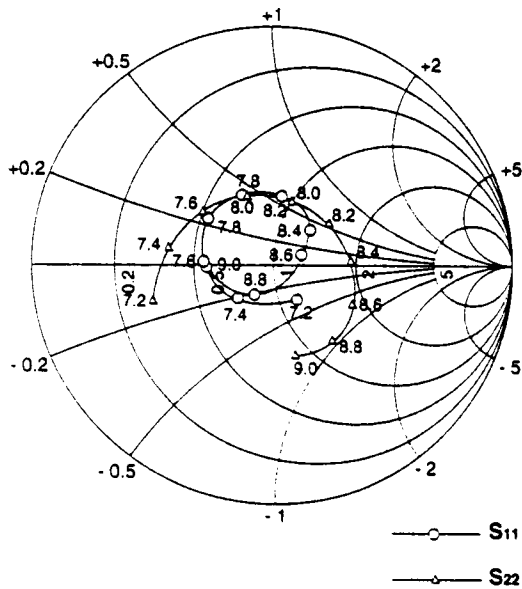
POWER DISSIPATION VS. CASE TEMPERATUREIM₃ VS. OUTPUT POWER CHARACTERISTICS

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TIM7785-30SL S-PARAMETERS (MAGN.and ANGLES)

$V_{DS} = 10V, I_{DS} = 7.0A$

$f = 7.2 \sim 9.0GHz$



FREQUENCY (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
7.2	0.17	-57	2.61	-149	0.037	-173	0.52	-164
7.4	0.20	-138	2.62	178	0.043	148	0.44	170
7.6	0.29	177	2.55	146	0.048	113	0.37	142
7.8	0.33	144	2.47	116	0.053	81	0.31	110
8.0	0.32	114	2.41	87	0.057	51	0.28	74
8.2	0.29	83	2.39	57	0.061	21	0.29	38
8.4	0.21	44	2.39	25	0.064	-9	0.32	4
8.6	0.12	21	2.29	-9	0.065	-40	0.36	-26
8.8	0.15	-123	2.09	-43	0.061	-74	0.39	-52
9.0	0.28	-179	1.79	-77	0.051	-109	0.38	-77