

POWRFET™ SILICON EPITAXIAL JUNCTION N-CHANNEL FIELD EFFECT TRANSISTOR

CP643

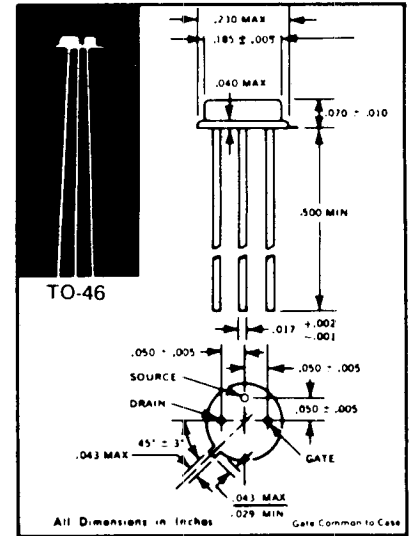
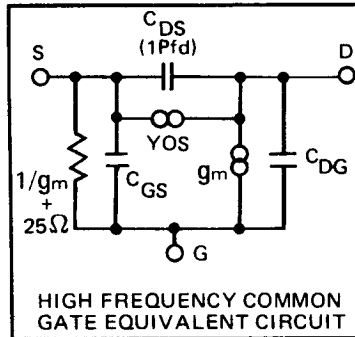
GEOMETRY 446, PG. 58

- FOR HIGH DYNAMIC RANGE R.F. AMPLIFIERS
- SPECIFIED FOR H.F. BAND – USEABLE THRU 500 MHz
- LOW NOISE FIGURE DIRECT FROM 50 Ohm LINE²

ELECTRICAL DATA

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL		UNITS
Drain to Source Voltage	BV_{DSO}	30	Volts
Drain to Gate Voltage	BV_{DGO}	30	Volts
Gate to Source Voltage	BV_{GSO}	-15	Volts
Peak Drain Current	I_D	0.3	Amps
Power Dissipation 25°C CASE	P_D	2.0	Watts
Derating Factor (slope)	DF	87	°C/W
Junction Temp. (Oper. & Store)	T_J	-55°C to +200°C	



TYPICAL CHARACTERISTICS IN CIRCUIT OF TMF 18

Dynamic Range 140 dB
Two Tone @ 3 MHz/5MHz
3rd Order Prod.

Signal Level	Typ. 3rd Order Product
0.25 Volt (OdBM)	- 58dB

ELECTRICAL CHARACTERISTICS: $T_{CASE} = 25^\circ C$ (UNLESS OTHERWISE STATED)

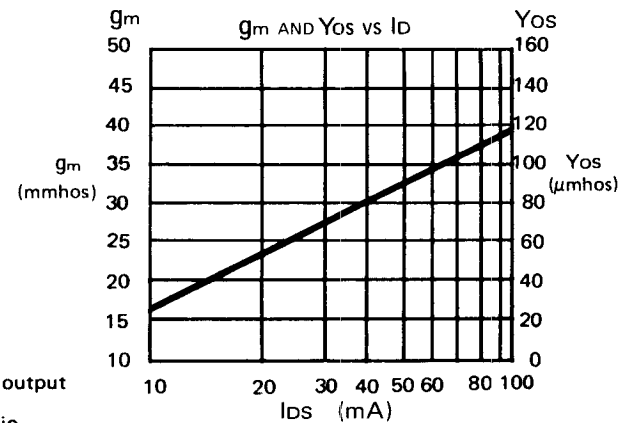
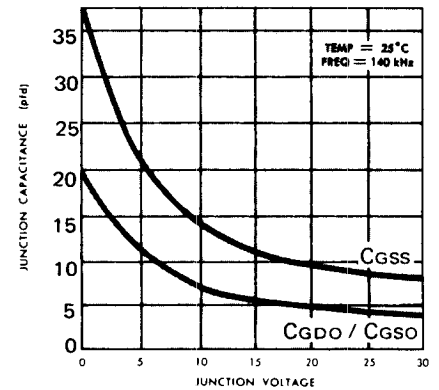
PARAMETERS AND CONDITIONS	SYMBOL	CP 643			UNITS
		Min.	Typ.	Max.	
Gate Leakage Current $V_{GS} = -15V, V_{DS} = 0$	I_{GSS}	-	1.0	10	nA
Gate Leakage Current $V_{GS} = -15V, V_{DS} = 0, T_C = 125^\circ C$	I_{GSS}	-	-	10	μA
Transconductance $V_{DS} = 15V, I_{DS} = 25 mA$	g_m	20	25	30	mMhos
Pinch-Off Voltage $V_{DS} = 5V, I_{DS} = 1.0 mA$	V_{PO}	2.0	4.0	7.0	Volts
Gain in Ckt. of TMF18 $I_{DS} = 25 mA, f = 1$ to 100 MHz.	A	8.0	9.0	10.0	dB
Gate to Source Cap. $V_{GS} = -20V$	C_{GS}	-	5	6	pf
Gate to Drain Cap. $V_{GD} = -20V$	C_{GD}	-	5	6	pf
Drain Current ¹ $V_{DS} = 15V, V_{GS} = 0$	I_{DSS}	50	100	250	mAmps
TMF18 ² $I_{DS} = 25 mA, f = 1 MHz.$	N.F.	-	4.0	5.0	dB

¹ Pulse Measurement 1% Duty Cycle 10 mS Max.

² The noise figure will be improved at the cost of gain when used in a 75Ω line with a 2:1 output winding ratio or in a 50Ω line with an input step up transformer.

³ The gain may be raised at a sacrifice in bandwidth by increasing the output transformer ratio.

JUNCTION CAPACITANCE VS. VOLTAGE



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