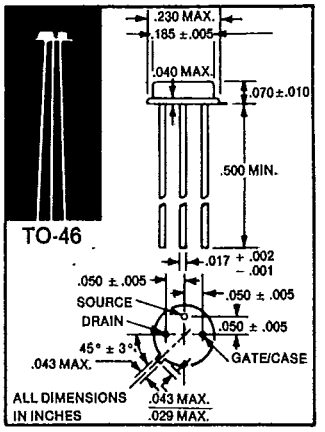
POWRFET™
SILICON EPITAXIAL JUNCTION N-CHANNEL FIELD EFFECT TRANSISTOR

CP643

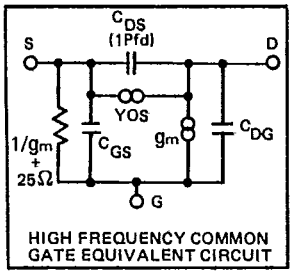
GEOMETRY 446



- FOR HIGH DYNAMIC RANGE R.F. AMPLIFIERS
- SPECIFIED FOR H.F. BAND – USEABLE THRU 500 MHz
- LOW NOISE FIGURE DIRECT FROM 50 Ohm LINE[2]

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)	D_F	87	°C/W
Junction Temp. (Oper. & Store)	T_J	–55°C to +200°C	



HIGH FREQUENCY COMMON GATE EQUIVALENT CIRCUIT

TYPICAL CHARACTERISTICS IN CIRCUIT OF TMF 18

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

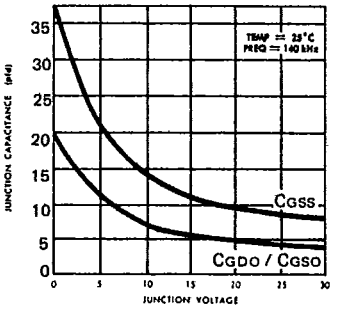
Signal Level	Typ. 3rd Order Product
0.25 Volt (0dBM)	- 58dB

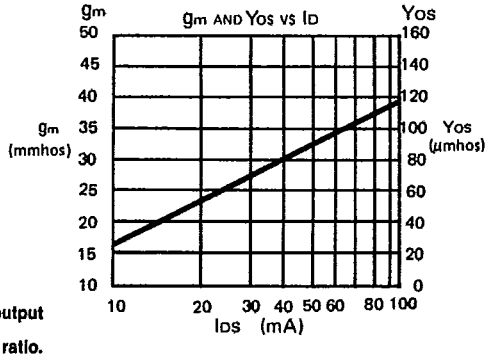
ELECTRICAL CHARACTERISTICS: T_{CASE} = 25°C (UNLESS OTHERWISE STATED)

PARAMETERS AND CONDITIONS	SYMBOL	CP 643 Min.	Typ.	Max.	UNITS
Gate Leakage Current V_{GS} = – 15V, V_{DS} = 0	I_{GSS}	–	1.0	10	nA
Gate Leakage Current V_{GS} = – 15V, V_{DS} = 0, TC = 125°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	pfd
Gate to Drain Cap. V_{GD} = – 20V	C_{GD}	–	5	6	pfd
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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