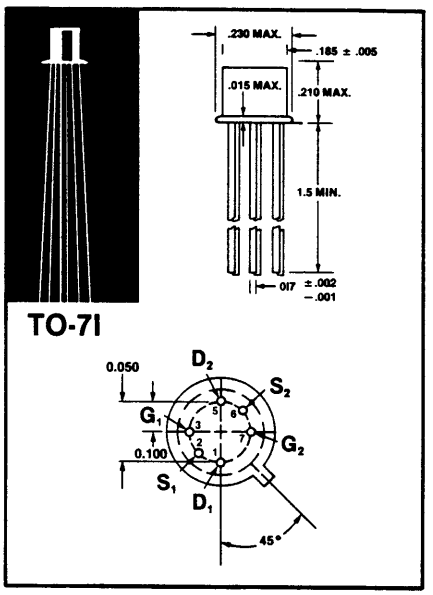
ULTRA LOW NOISE
DUAL MATCHED
N-CHANNEL FIELD EFFECT TRANSISTOR

CD860

GEOMETRY 424



HIGH PERFORMANCE DIFFERENTIAL AMPLIFIERS

- 1.4 $nV/Hz^{1/2}$ en @ 1 kHz
- Min. Operating Gm 25,000 µmho
- Matched VPO and Gm

The CD860 is a high GM/ID low noise junction F.E.T. for low level amplifier use. The min. GM of 25,000 assures a voltage gain of 25 min. with a 1K drain load. As a source follower it has a typical output impedance of 25 ohms. The 10mA operating point is easily held due to its low pinchoff voltage and is very close to it's zero T.C. point for temperature stable operation.

ELECTRICAL DATA ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL		UNITS
Drain to Source Voltage	BV_{DSO}	20	Volts
Drain to Gate Voltage	BV_{DGO}	20	Volts
Gate to Source Voltage	BV_{GSO}	-20	Volts
D.C. Forward Gate Current	I_{GF}	50	mA
Junction Temp. (Operating & Storage)	T_J	−65°C to +200°C	
Power Dissipation (Free Air)	P_D	400 mW	
Lead Temp. (@ 1/16" ± 1/32" from case)	T_L	240° for 10 sec.	
Derating Factor (Free Air)	D_F	2.3 mW/C°	

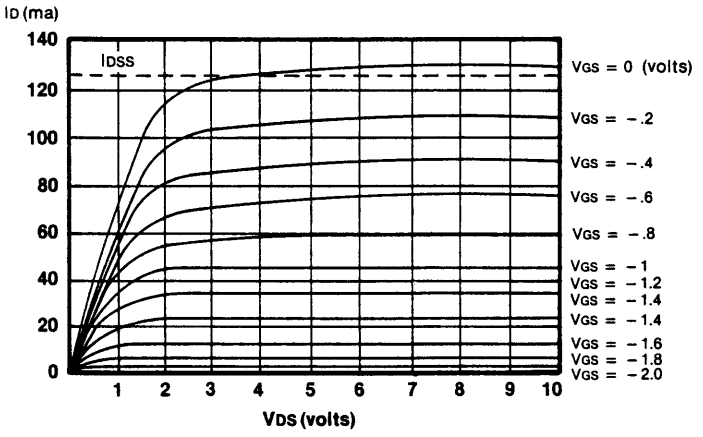
ELECTRICAL CHARACTERISTICS: T_A = 25°C (UNLESS OTHERWISE STATED)

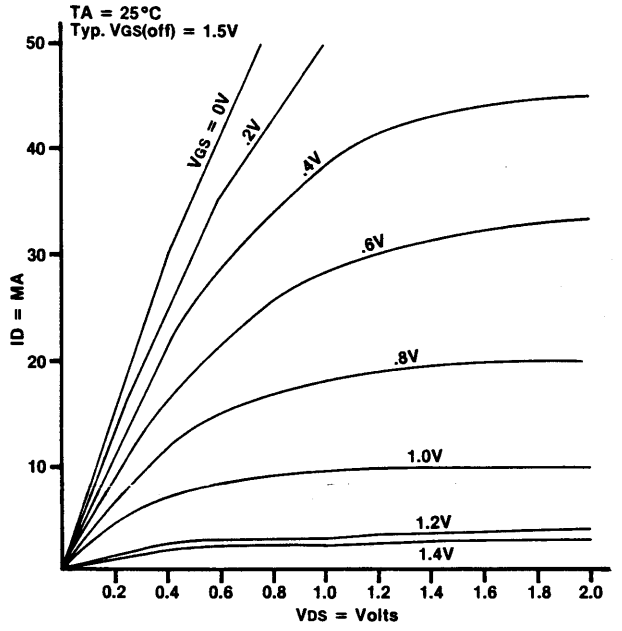
PARAMETER	SYMBOL	CONDITION	Min.	Typ.	Max.	UNITS
Gate Leakage Current	I_{GSS}	V_{GS} = −10V, V_{DS} = 0		0.1	3.0	nA
Gate Leakage Current	I_{GSS}	V_{GS} = −10V, V_{DS} = 0, T_A = 85°C		5	100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 10V, V_{GS} = 0	10	100		mA
Pinch-Off Voltage	V_{PO}	V_{DS} = 10V, I_D = 0.1mA	0.3	1.5	3.0	Volts
Transconductance	g_m	V_{DS} = 10V, I_D = 10mA, f = 1kHz	25	40		mmho
Input Capacitance	C_{iss}	V_{DS} = 10V, I_D = 10mA, f = 140kHz		30	35	pfd
Reverse Xfer Cap	C_{rss}	V_{DS} = 10V, f = 140kHz		17	20	pfd
Gate to Drain Capacitance	C_{GD}	V_{GD} = −10V, f = 140kHz		20		pfd
Output Admittance	Y_{OS}	V_{DS} = 10V, I_D = 10mA		50	100	µmho
Input Noise Voltage	en	V_{DS} = 5V, I_D = 10mA, f = 1kHz		1.4	2.0	$nV/Hz^{1/2}$
Input Noise Voltage	en	V_{DS} = 5V, I_D = 10mA, f = 10Hz		6.0	10	$nV/Hz^{1/2}$
Input Noise Voltage	en TOTAL	V_{DS} = 5V, I_D = 10mA, f = 10Hz to 20kHz		0.4	0.6	µVrms
Equivalent Open Ckt. Input Noise Current	in	Rsource <100KΩ f = 1kHz		.01		$pA/Hz^{1/2}$
VPO Match	VPO_1-VPO_2	V_{DS} = 10V, I_D = 0.1mA			25	mV
Gm Match	Gm1-Gm2	V_{DS} = 10V, I_D = 10mA, f = 1kHz			5	%

TELEDYNE CRYSTALONICS

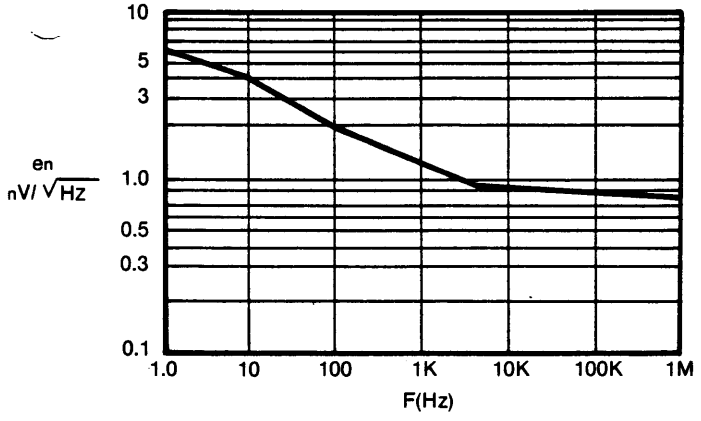
147 Sherman Street, Cambridge, Mass. 02140
Tel: (617) 491-1670 • TWX: 710-320-1196

TYPICAL CHARACTERISTIC CURVES

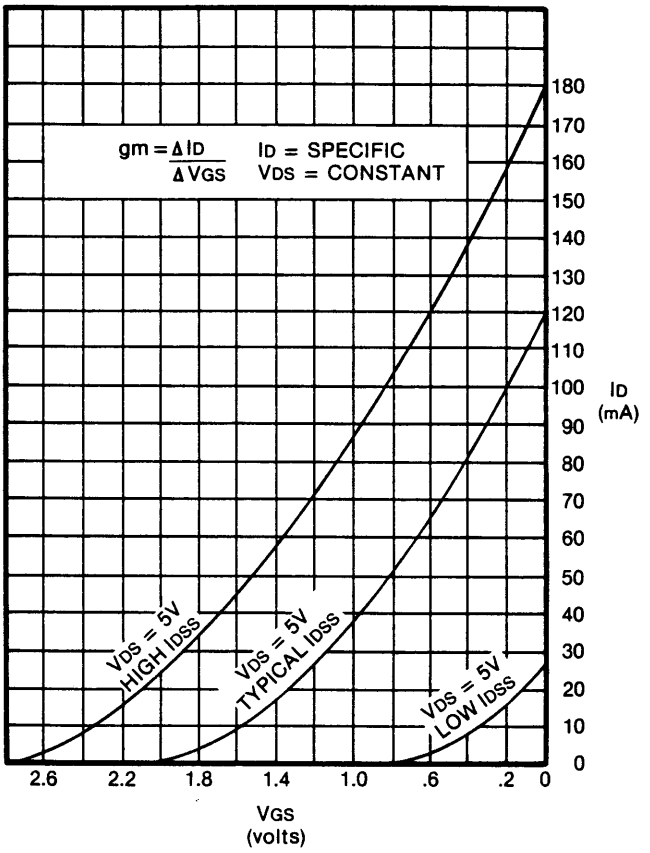




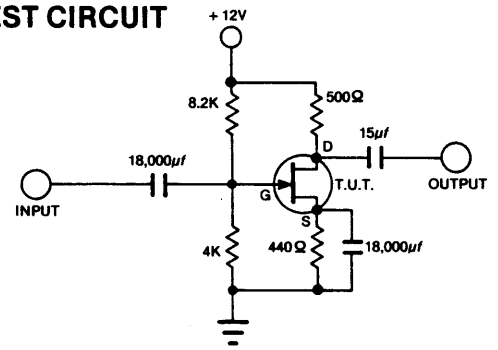
TYPICAL SHORT CIRCUIT INPUT NOISE VS. FREQUENCY



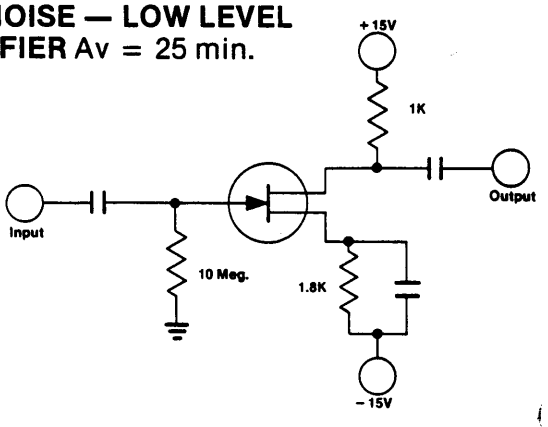
TRANSCONDUCTANCE CHARACTERISTICS



NOISE TEST CIRCUIT



LOW NOISE — LOW LEVEL AMPLIFIER Av = 25 min.



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