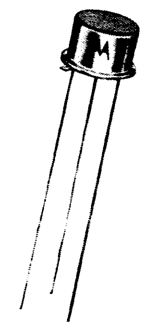
MOTOROLA

MFE2097
MFE2098

JUNCTION FIELD-EFFECT TRANSISTORS

SYMMETRICAL SILICON N-CHANNEL

AUGUST 1966 — DS 5189



TO-39
(WITH 1½" LEADS)

Si FIELD-EFFECT TRANSISTORS
MFE2097, MFE2098
DS 5189

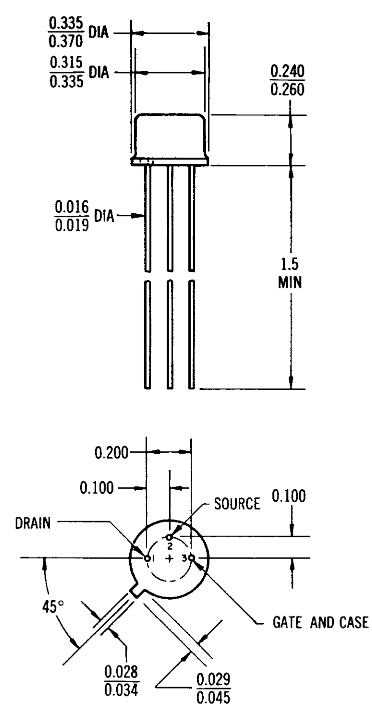
SILICON N-CHANNEL JUNCTION FIELD-EFFECT TRANSISTORS

. . . designed for general purpose amplifier and audio driver applications.

- High Gain
  $|y_{fs}| = 10{,}000$ to $14{,}000\ \mu$ mhos minimum
- High Input Impedance
  $C_{iss} = 20$ pF maximum @ 15 V
- Low Feedback Capacitance
  $C_{rss} = 5.0$ pF maximum @ 15 V

MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	50	Vdc
Drain-Gate Voltage	V_{DG}	50	Vdc
Gate-Source Voltage	V_{GS}	-50	Vdc
Gate Current	I_G	10	mAdc
Total Device Dissipation Derate Above 25°C	P_D	1.5 10	W mW/°C
Operating Junction Temperature	T_J	175	°C
Storage Temperature Range	T_{stg}	-65 to +200	°C



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(WITH 1½" LEADS)

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Gate-Source Breakdown Voltage (I_G = -10 μAdc, V_{DS} = 0)		$V_{(BR)GSS}$	-50	—	—	Vdc
Gate Reverse Current (V_{GS} = -15 Vdc, V_{DS} = 0)		I_{GSS}	—	—	-1.0	nAdc
(V_{GS} = -15 Vdc, V_{DS} = 0, T_A = 150°C)			—	—	-1000	
Gate-Source Cutoff Voltage (I_D = 1.0 nAdc, V_{DS} = 15 Vdc)	MFE2097	$V_{GS(off)}$	—	—	-7	Vdc
	MFE2098		—	—	-10	
Gate-Source Voltage (I_D = 1.5 mAdc, V_{DS} = 15 Vdc)	MFE2097	V_{GS}	-0.5	—	-5.0	Vdc
(I_D = 4.0 mAdc, V_{DS} = 15 Vdc)	MFE2098		-2.0	—	-8	
ON CHARACTERISTICS						
Zero-Gate-Voltage Drain Current* (V_{DS} = 15 Vdc, V_{GS} = 0)	MFE2097	I_{DSS}*	15	—	50	mAdc
	MFE2098		40	—	100	
DYNAMIC CHARACTERISTICS						
Forward Transfer Admittance* (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1 kHz)	MFE2097	$\lvert y_{fs} \rvert$*	10,000	—	20,000	μmhos
	MFE2098		14,000	—	25,000	
Output Admittance* (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1 kHz)	MFE2097	$\lvert y_{os} \rvert$*	—	—	200	μmhos
	MFE2098		—	—	400	
Input Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1 MHz)		C_{iss}	—	14	20	pF
Reverse Transfer Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1 MHz)		C_{rss}	—	3	5.0	pF
Output Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1 MHz)		C_{osp}	—	5	—	pF

*Pulse Test: Pulse Width ≦ 630 ms; Duty Cycle ≦ 10%

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DS 5189

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MFE2133

JUNCTION FIELD-EFFECT TRANSISTOR

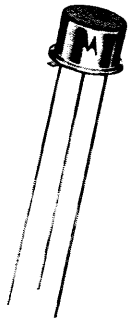
SYMMETRICAL SILICON N-CHANNEL

AUGUST 1966 — DS 5186

SILICON N-CHANNEL
JUNCTION FIELD-EFFECT TRANSISTOR

. . . designed for high-level chopper applications.

- Low Drain-Source Resistance
  $r_{ds(on)}$ = 60 ohms maximum
- Low Transfer Capacitance
  C_{rss} = 5 pF maximum
- High Input Impedance
  C_{iss} = 20 pF maximum



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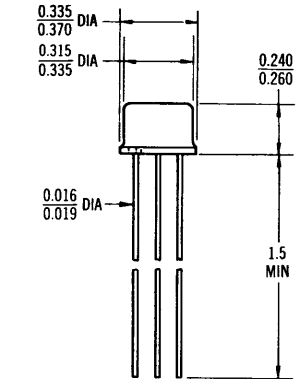
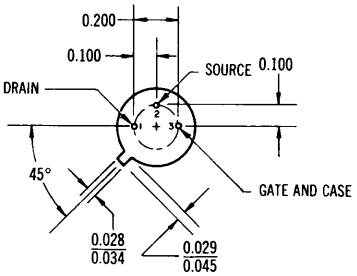
(WITH 1½" LEADS)

MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	Vdc
Drain-Gate Voltage	V_{DG}	30	Vdc
Gate-Source Voltage	V_{GS}	-30	Vdc
Gate-Drain Current	I_G	10	mAdc
Total Device Dissipation @ T_A = 25°C Derate Above 25°C	P_D	1.5 10	W mW/°C
Operating Junction Temperature	T_J	175	°C
Storage Temperature Range	T_{stg}	-65 to +200	°C





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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Gate-Source Breakdown Voltage (I_G = -1 μAdc, V_{DS} = 0)	$V_{(BR)GSS}$	-30	—	—	Vdc
Drain Cutoff Current (V_{DG} = 15 Vdc, I_S = 0)	I_{DGO}	—	—	1.0	nAdc
(V_{DG} = 15 Vdc, I_S = 0, T_A = 150°C)		—	—	1000	
ON CHARACTERISTICS					
Zero-Gate-Voltage Drain Current* (V_{DS} = 10 Vdc, V_{GS} = 0)	I_{DSS}*	25	—	—	mAdc
Drain Cutoff Current (V_{DS} = 10 Vdc, V_{GS} = -10 Vdc)	$I_{D(off)}$	—	—	1.0	nAdc
(V_{DS} = 10 Vdc, V_{GS} = -10 Vdc, T_A = 150°C)		—	—	1000	
DYNAMIC CHARACTERISTICS					
Forward Transfer Admittance* (V_{DS} = 10 Vdc, V_{GS} = 0, f = 1 kHz)	$\lvert y_{fs} \rvert$*	12000	—	—	μmhos
Drain-Source Resistance (V_{GS} = 0, I_D = 0, f = 1 kHz)	$r_{ds(on)}$	—	40	60	ohms
Input Capacitance (V_{DS} = 10 Vdc, V_{GS} = 0, f = 1 MHz)	C_{iss}	—	14	20	pF
Reverse Transfer Capacitance (V_{GS} = -10 Vdc, V_{DS} = 0, f = 1 MHz)	C_{rss}	—	3	5	pF

*Pulse Test: Pulse Width ≤ 630 ms; Duty Cycle = 10%

FIGURE 1 — DRAIN-SOURCE SATURATION REGION

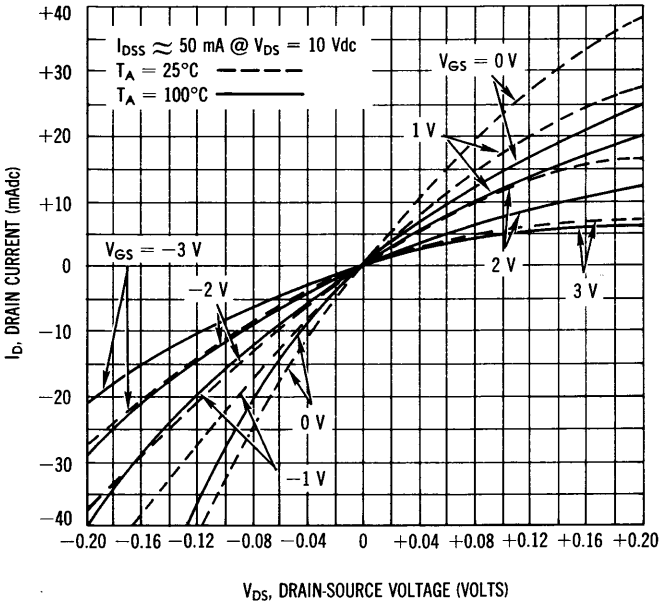
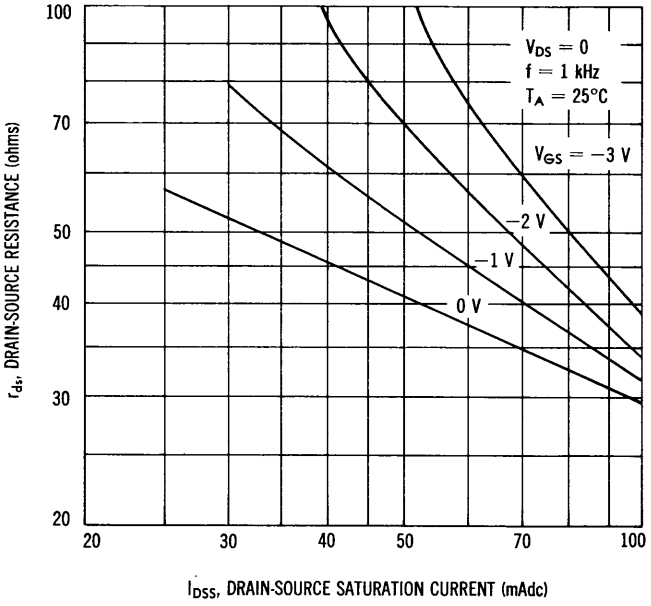


FIGURE 2 — DRAIN-SOURCE RESISTANCE



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