

TOPAZ

SEMICONDUCTOR

T-29-25

2N6781, 2N6782

N-CHANNEL ENHANCEMENT-MODE D-MOS POWER FETs

ORDERING INFORMATION

TO-205 AF (TO-39) Hermetic Package	2N6782	2N6781
Description	100V, 0.6 ohm	60V, 0.6 ohm

FEATURES

- Gate Stand-off Voltage, $\pm 40V$ min.
- Continuous I_D of 1 Amp in small package
- Wide Variety of Packages

APPLICATIONS

- Motor Controls
- Line Drivers
- Power Supplies

ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ C$ unless otherwise noted)

Drain-Source Voltage	
2N6782	100V*
2N6781	60V*
Drain-Gate Voltage ($R_{GS} = 1M\Omega$)	
2N6782	100V*
2N6781	60V*
Gate-Source Voltage	$\pm 40V$
Continuous Drain Current	
	$T_C = +100^\circ C$ $T_C = +25^\circ C$
	2.25A* 3.5A*
Peak Pulsed Drain Current	8.0A

Maximum Power Dissipation

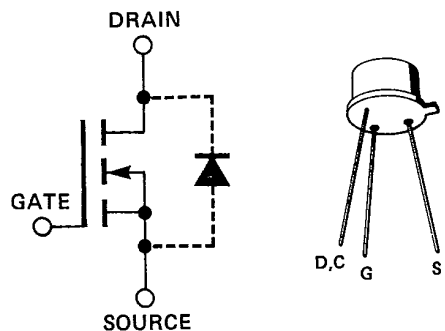
	$T_C = +100^\circ C$	$T_C = +25^\circ C$
Maximum Power Dissipation	6.0W*	15W*
Linear Derating Factor		
	Junction to Ambient (mW/ $^\circ C$)	Junction to Case (mW/ $^\circ C$)
	5.0*	120*

Operating Junction and Storage

Temperature Range	-55 to $+150^\circ C$ *
Lead Temperature (1/16" from mounting surface for 30 Sec)	$+300^\circ C$ *

*JEDEC Registered Values

CONFIGURATION



PACKAGE DIMENSIONS

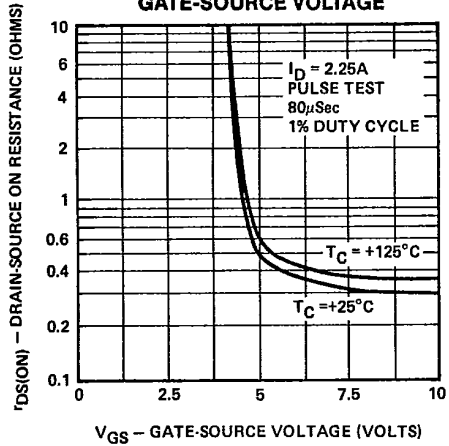
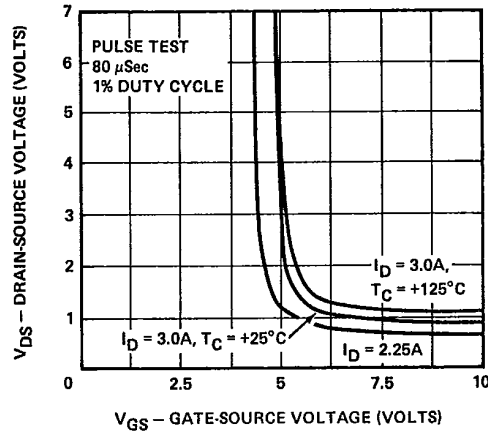
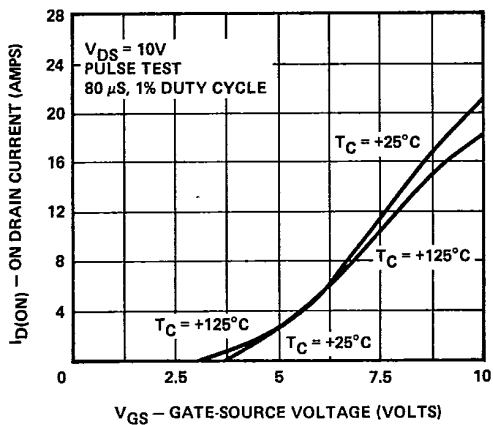
TO-205 AF
(See Package 6)

ELECTRICAL CHARACTERISTICS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

#	CHARACTERISTIC	2N6782			2N6781			UNIT	TEST CONDITIONS
		MIN	TYP	MAX	MIN	TYP	MAX		
1	BV_{DSS} Drain-Source Breakdown Voltage	100*	125		60*	90		V	$I_D = 250\mu\text{A}$, $V_{GS} = 0$
2	$V_{GS(th)}$ Gate-Source Threshold Voltage	2.0*		4.0*	2.0*		4.0*	V	$V_{DS} = V_{GS}$
3		1.0*		4.0*	1.0*		4.0*		$I_D = 250\mu\text{A}$
4	I_{GSS} Gate-Body Leakage Current			100*			100*	nA	$V_{GS} = 20\text{V}$, $V_{DS} = 0$
5				200*			200*		$T_C = +125^\circ\text{C}$
6				-100*			-100*		$V_{GS} = -20\text{V}$, $V_{DS} = 0$
7	I_{DSS} Drain-Source OFF Leakage Current			0.25*				mA	$V_{DS} = 80\text{V}$, $V_{GS} = 0$
8				1.0*					$V_{DS} = 100\text{V}$, $V_{GS} = 0$
9							0.25*		$V_{DS} = 48\text{V}$, $V_{GS} = 0$
10							1.0*		$V_{DS} = 60\text{V}$, $V_{GS} = 0$
11	$I_{D(on)}$ ON Drain Current ⁽¹⁾	3.5*			3.5*			A	$V_{DS} = 10\text{V}$, $V_{GS} = 10\text{V}$
12	$V_{DS(on)}$ Drain-Source ⁽¹⁾ ON Voltage			2.1*			2.1*	V	$V_{GS} = 10\text{V}$, $I_D = 3.5\text{A}$
13	$r_{DS(on)}$ Drain-Source ⁽¹⁾ ON Resistance			0.6*			0.6*	ohms	$V_{GS} = 10\text{V}$
14				1.08*			1.08*		$I_D = 2.25\text{A}$
15	g_{fs} Common-Source ⁽¹⁾ Forward Transcond.	1.0*		3.0*	1.0*		3.0*	S	$V_{DS} = 10\text{V}$, $V_{GS} = 10\text{V}$ $f = 1\text{KHz}$
16	C_{iss} Common-Source Input Capacitance	60*		200*	60*		200*	pF	$V_{DS} = 25\text{V}$, $V_{GS} = 0$ $f = 1\text{MHz}$
17	C_{rss} Common-Source Reverse Transfer Capacitance	10*		25*	10*		25*		
18	C_{OSS} Common-Source Output Capacitance	40*		100*	40*		100*		
19	$t_{d(on)}$ Turn-ON Delay Time			15*			15*	nsec	$V_{DD} = 34\text{V}$ $R_L = 15\text{ ohms}$ $R_G = 25\text{ ohms}$ $V_{G(on)} = 10\text{V}$
20	t_r Rise Time			25*			25*		
21	$t_{d(off)}$ Turn-OFF Delay Time			25*			25*		
22	t_f Fall Time			20*			20*		
23	I_S Continuous Source Current ⁽¹⁾	3.5*			3.5*			A	
24	I_{SM} Peak Source Current ⁽¹⁾	8.0*			8.0*				
25	V_{SD} Source-Drain ⁽¹⁾ Forward Voltage	0.75*		1.50*	0.75*		1.50*	V	$V_{GS} = 0$, $I_S = 3.5\text{A}$
26	$R_{th J-C}$ Thermal Resistance Junction-to-Case			8.33*			8.33*	$^\circ\text{C/W}$	
27	$R_{th J-A}$ Thermal Resistance Junction-to-Ambient			170			170	$^\circ\text{C/W}$	

Note 1: Pulse Test 80 μSec , 1% Duty Cycle

*JEDEC Registered Values

TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = +25^\circ\text{C}$ unless otherwise specified)**DRAIN-SOURCE ON RESISTANCE**
—vs—
GATE-SOURCE VOLTAGE**ON VOLTAGE CHARACTERISTICS****ON DRAIN CURRENT**
—vs—
GATE-SOURCE VOLTAGE**FORWARD TRANSCONDUCTANCE**
—vs—
ON DRAIN CURRENT