

T-29-25

**TOPAZ**  
SEMICONDUCTOR

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

**Maximum Power Dissipation**

$T_C = +100^\circ C$	$T_C = +25^\circ C$
6.0W*	15W*

**Linear Derating Factor**

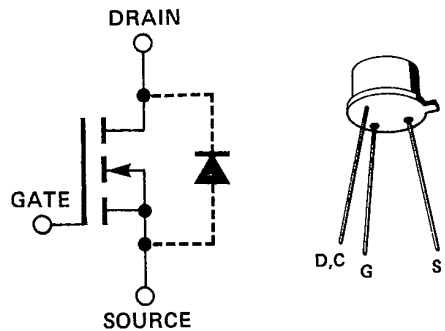
Junction to Ambient	Junction to Case
(mW/ $^\circ C$ )	(mW/ $^\circ C$ )
5.0*	120*

**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)



2N6781, 2N6782

**ELECTRICAL CHARACTERISTICS** (T<sub>c</sub> = +25°C unless otherwise noted)

#	CHARACTERISTIC	2N6782			2N6781			UNIT	TEST CONDITIONS
		MIN	TYP	MAX	MIN	TYP	MAX		
1	BV <sub>DSS</sub> Drain-Source Breakdown Voltage	100*	125		60*	90		V	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0
2	V <sub>GS(th)</sub> Gate-Source Threshold Voltage	2.0*	4.0*	2.0*	4.0*			V	V <sub>DS</sub> = V <sub>GS</sub> I <sub>D</sub> = 250μA
3		1.0*	4.0*	1.0*	4.0*				T <sub>C</sub> = +125°C
4	I <sub>GSS</sub> Gate-Body Leakage Current		100*			100*		nA	V <sub>GS</sub> = 20V, V <sub>DS</sub> = 0
5			200*			200*			T <sub>C</sub> = +125°C
6				-100*			-100*		V <sub>GS</sub> = -20V, V <sub>DS</sub> = 0
7	I <sub>DSS</sub> Drain-Source OFF Leakage Current		0.25*					mA	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0
8			1.0*						V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0
9						0.25*			V <sub>DS</sub> = 48V, V <sub>GS</sub> = 0
10						1.0*			V <sub>DS</sub> = 60V, V <sub>GS</sub> = 0
11	I <sub>D(on)</sub> ON Drain Current <sup>(1)</sup>	3.5*			3.5*			A	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 10V
12	V <sub>DS(on)</sub> Drain-Source ON Voltage			2.1*			2.1*	V	V <sub>GS</sub> = 10V, I <sub>D</sub> = 3.5A
13	r <sub>DS(on)</sub> Drain-Source ON Resistance			0.6*			0.6*	ohms	V <sub>GS</sub> = 10V
14				1.08*			1.08*		I <sub>D</sub> = 2.25A
15	g <sub>fs</sub> Common-Source Forward Transcond.	1.0*		3.0*	1.0*		3.0*	S	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 10V f = 1KHz
16	C <sub>iss</sub> Common-Source Input Capacitance	60*		200*	60*		200*	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0 f = 1MHz
17	C <sub>rss</sub> Common-Source Reverse Transfer Capacitance	10*		25*	10*		25*		
18	C <sub>OSS</sub> Common-Source Output Capacitance	40*		100*	40*		100*		
19	t <sub>d(on)</sub> Turn-ON Delay Time			15*			15*	nsec	V <sub>DD</sub> = 34V R <sub>L</sub> = 15 ohms R <sub>G</sub> = 25 ohms V <sub>G(on)</sub> = 10V
20	t <sub>r</sub> Rise Time			25*			25*		
21	t <sub>d(off)</sub> Turn-OFF Delay Time			25*			25*		
22	t <sub>f</sub> Fall Time			20*			20*		
23	I <sub>S</sub> Continuous Source Current <sup>(1)</sup>	3.5*			3.5*			A	
24	I <sub>SM</sub> Peak Source Current <sup>(1)</sup>	8.0*			8.0*				
25	V <sub>SD</sub> Source-Drain Forward Voltage	0.75*		1.50*	0.75*		1.50*	V	V <sub>GS</sub> = 0, I <sub>S</sub> = 3.5A
26	R <sub>th J-C</sub> Thermal Resistance Junction-to-Case			8.33*			8.33*	°C/W	
27	R <sub>th J-A</sub> Thermal Resistance Junction-to-Ambient			170			170	°C/W	

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

\*JEDEC Registered Values

**TYPICAL PERFORMANCE CHARACTERISTICS** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

