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2N6796

8A, 100V, 0.180 Ohm, N-Channel Power MOSFET

The 2N6796 is an N-Channel enhancement mode silicon gate power field effect transistor designed for applications such as switching regulators, switching converters, motor drivers, relay drivers, and drivers for high power bipolar switching transistors requiring high speed and low gate drive power. This type can be operated directly from integrated circuits.

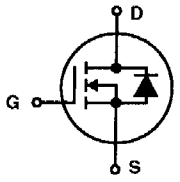
Ordering Information

PART NUMBER	PACKAGE	BRAND
2N6796	TO-205AF	2N6796

Features

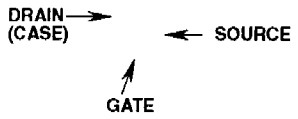
- 8A, 100V
- $r_{DS(ON)} = 0.180\Omega$
- SOA is Power Dissipation Limited
- Nanosecond Switching Speeds
- Linear Transfer Characteristics
- High Input Impedance
- Majority Carrier Device

Symbol



Packaging

JEDEC TO-205AF



Absolute Maximum Ratings $T_C = 25^oC$, Unless Otherwise Specified

		2N6796	UNITS
Drain to Source Breakdown Voltage (Note 1)	V_{DS}	100	V
Drain to Gate Voltage (R_{GS} = 20kΩ) (Note 1)	V_{DGR}	100	V
Continuous Drain Current (Note 1)	I_D	8	A
$T_C = 100^oC$	I_D	5	A
Pulsed Drain Current (Note 1)	I_{DM}	32	A
Gate to Source Voltage (Note 1)	V_{GS}	±20	V
Continuous Source Current (Body Diode)	I_S	8	A
Pulse Source Current (Body Diode)	I_{SM}	32	A
Maximum Power Dissipation (Figure 1)	P_D	25	W
Linear Derating Factor (Figure 1)		0.20	W/°C
Operating and Storage Temperature	T_J, T_{STG}	-55 to 150	°C
Maximum Temperature for Soldering			
Leads at 0.063in (1.6mm) from Case for 10s	T_L	300	°C
Package Body for 10s, See Techbrief 334	T_{pkg}	260	°C

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

NOTE:

1. $T_J = 25^oC$ to 125^oC.

Electrical Specifications $T_C = 25^oC$, Unless Otherwise Specified

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Drain to Source Breakdown Voltage	BV_{DSS}	I_D = 0.25mA, V_{GS} = 0V	100	-	-	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}$, I_D = 0.5mA	2	-	4	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V	-	-	250	µA
		V_{DS} = 80V, V_{GS} = 0V, $T_C = 125^oC$	-	-	1000	µA
On-State Drain Current (Note 2)	$V_{DS(ON)}$	I_D = 8A, V_{GS} = 10V	-	-	1.56	V
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V	-	-	±100	nA
Drain to Source On Resistance (Note 2)	$r_{DS(ON)}$	I_D = 5A, V_{GS} = 10V	-	0.14	0.180	Ω
		I_D = 5A, V_{GS} = 10V, $T_C = 125^oC$	-	-	0.350	Ω
Diode Forward Voltage (Note 2)	V_{SD}	$T_C = 25^oC$, I_S = 8A, V_{GS} = 0V	0.75	-	1.5	V
Forward Transconductance (Note 2)	g_{fs}	V_{DS} = 5V, I_D = 5A	3	5.5	9	S
Turn-On Delay Time	$t_{d(ON)}$	$V_{DD} \cong$ 30V, I_D = 5A, R_G = 50Ω (Figure 17) MOSFET Switching Times are Essentially Independent of Operating Temperature	-	-	30	ns
Rise Time	t_r		-	-	75	ns
Turn-Off Delay Time	$t_{d(OFF)}$		-	-	40	ns
Fall Time	t_f		-	-	45	ns
Input Capacitance	C_{ISS}	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz, (Figure 11)	350	600	900	pF
Output Capacitance	C_{OSS}		150	300	500	pF
Reverse Transfer Capacitance	C_{RSS}		50	100	150	pF
Thermal Resistance Junction to Case	$R_{\theta JC}$		-	-	5	°C/W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	Free Air Operation	-	-	175	°C/W
Safe Operating Area	SOA	V_{DS} = 80V, I_D = 310mA	25	-	-	W
		V_{DS} = 3.12V, I_D = 8A	25	-	-	W

Source to Drain Diode Specifications

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Reverse Recovery Time	t_{rr}	$T_J = 150^oC$, I_{SD} = 8A, dI_{SD}/dt = 100A/µs	-	300	-	ns
Reverse Recovered Charge	Q_{RR}	$T_J = 150^oC$, I_{SD} = 8A, dI_{SD}/dt = 100A/µs	-	1.5	-	µC