

TO-220AB 7A, 800V N-CHANNEL POWER MOSFET
FEATURES

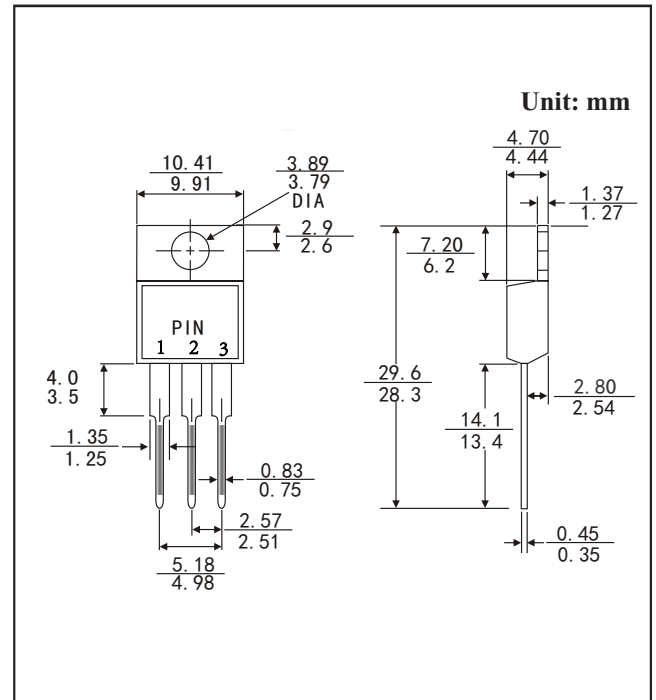
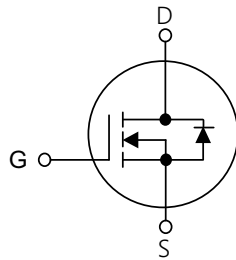
- 8A,500V, $R_{DS(ON)MAX}=1.8\ \Omega$ @ $V_{GS}=10V/3.5A$
- Low gate charge
- Low C_{iss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

SYMBOL

Pin Definition:

1. Gate
2. Drain
3. Source

Block Diagram


ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	800	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	7	A
	Pulsed (Note 1)	I_{DM}	26.4	A
Avalanche Energy	Single Pulsed (Note 2)	E_{AS}	580	mJ
	Repetitive (Note 1)	E_{AR}	16.7	mJ
Peak Diode Recovery dv/dt (Note 3)		dv/dt	4.5	V/ns
Power Dissipation		P_D	52	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~+150	$^\circ\text{C}$

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. $L=25\text{mH}$, $I_{AS}=6.6\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

3. $I_{SD} \leq 8\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$

4. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	2.4	$^\circ\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	800			V
Breakdown Voltage Temperature Coefficient		ΔBV _{DSS} /ΔT _J	I _D =250μA, Referenced to 25°C		0.93		V/°C
Drain-Source Leakage Current		I _{DSS}	V _{DS} =800V, V _{GS} =0V			1	μA
			V _{DS} =640V, T _C =125°C			100	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{DS} =0V ,V _{GS} =20V			5	μA
	Reverse		V _{DS} =0V ,V _{GS} =-20V			-5	μA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	3.0		5.0	V
Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =3.5A		---	1.8	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		1290	1680	pF
Output Capacitance		C _{OSS}			120	155	pF
Reverse Transfer Capacitance		C _{RSS}			10	13	pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =640V, V _{GS} =10V, I _D =6.6A (Note 1,2)		27	35	nC
Gate-Source Charge		Q _{GS}			8.2		nC
Gate-Drain Charge		Q _{GD}			11		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =400V, I _D =6.6A, R _G =25Ω (Note 1,2)		35	80	ns
Turn-ON Rise Time		t _R			100	210	ns
Turn-OFF Delay Time		t _{D(OFF)}			50	110	ns
Turn-OFF Fall Time		t _F			60	130	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				6.6	A
Maximum Body-Diode Pulsed Current		I _{SM}				26.4	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =6.6A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time		t _{rr}	V _{GS} =0V, I _S =6.6A,		650		ns
Body Diode Reverse Recovery Charge		Q _{RR}	di _F /dt=100A/μs (Note 1)		7.0		μC

Note: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$

2. Essentially independent of operating temperature

■ TYPICAL CHARACTERISTICS

