

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

■ FEATURES

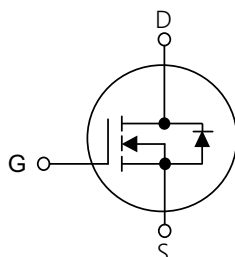
- 7A, 800V, $R_{DS(ON)MAX}=1.8\ \Omega$ @ $V_{GS}=10V/3.5A$
- Low gate charge
- Low C_{iss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

■ **SYMBOL**

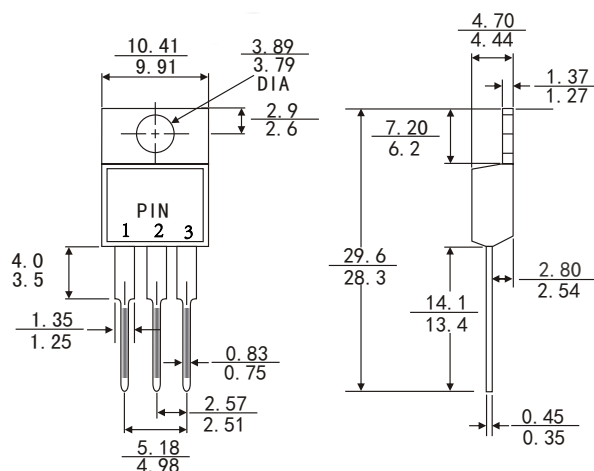
Pin Definition:

1. Gate
2. Drain
3. Source

Block Diagram



Unit: mm



■ **ABSOLUTE MAXIMUM RATINGS** (T_C=25°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	°C
Storage Temperature		T_{STG}	-55~+150	°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. $I_{SD} \leq 8A$, $di/dt \leq 200A/\mu s$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ C$

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.

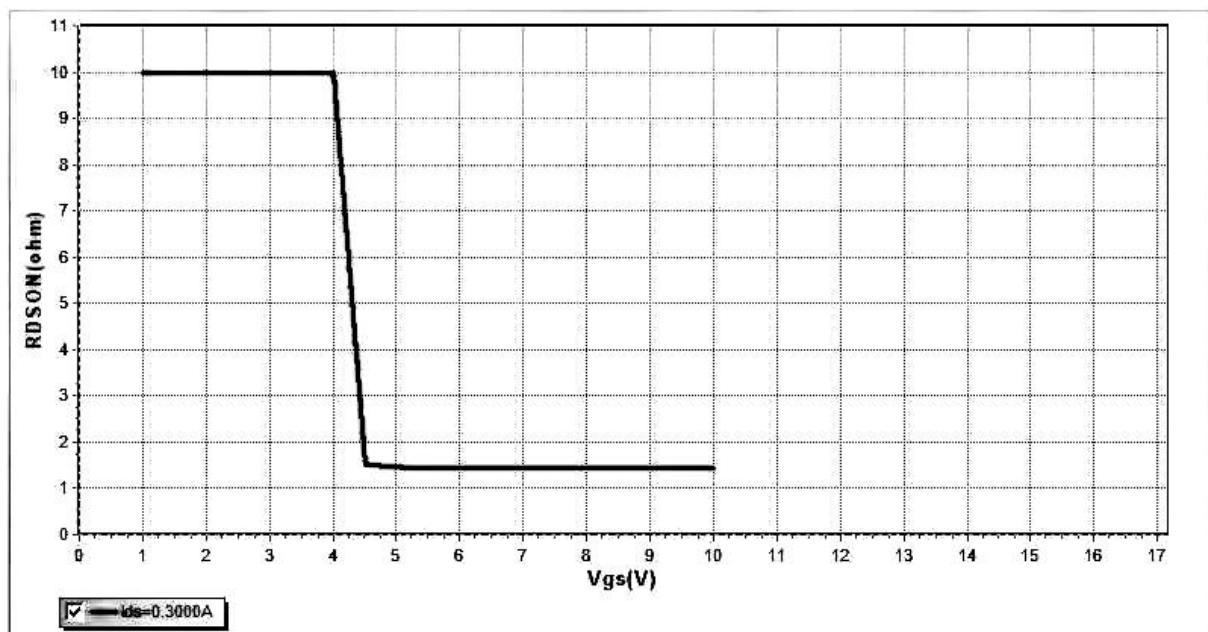
■ THERMAL DATA

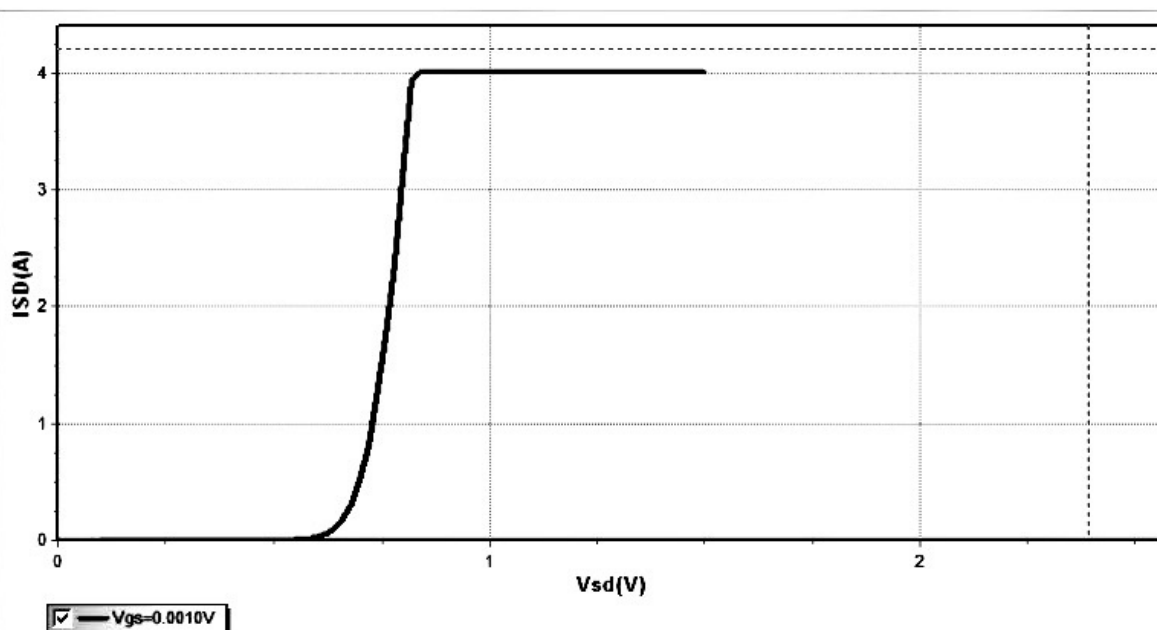
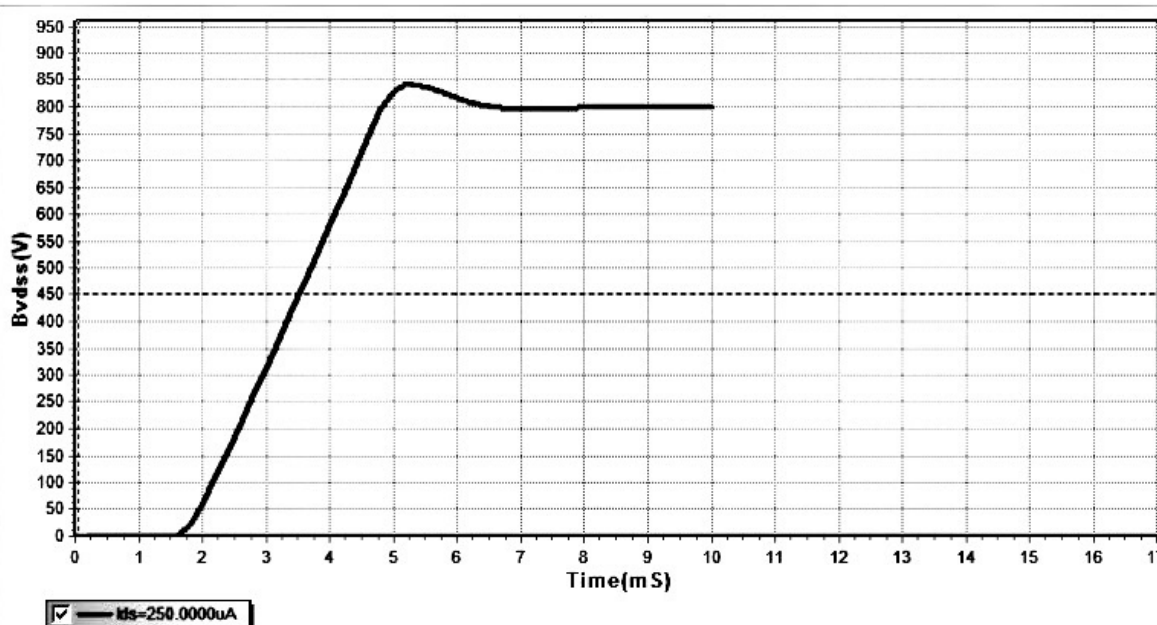
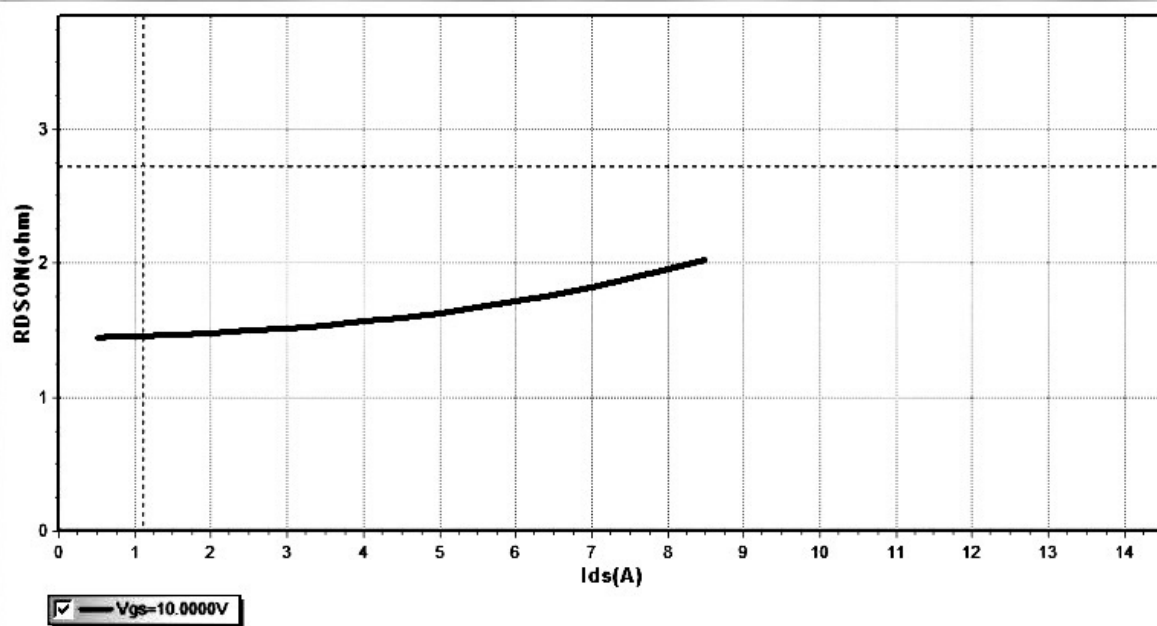
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	°C/W
Junction to Case	θ_{JC}	2.4	°C/W

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

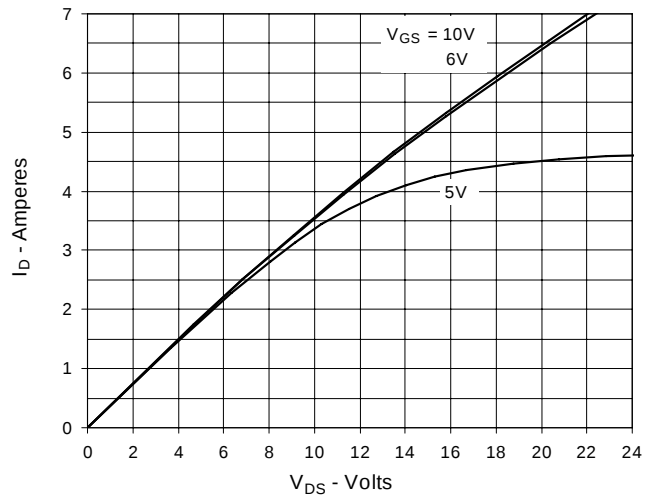
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	800			V
Breakdown Voltage Temperature Coefficient		ΔBV _{DSS} /ΔT _J	I _D =250μA, Referenced to 25°C		0.93		V/°C
Drain-Source Leakage Current		I _{DSS}	V _{DS} =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} =30V			100	nA
	Reverse		V _{DS} =0V ,V _{GS} =-30V			-100	nA
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




Output Characteristics @ 125°C



Forward Voltage Drop of Intrinsic Diode

