



7N80

800V N-Channel Power MOSFET

Features

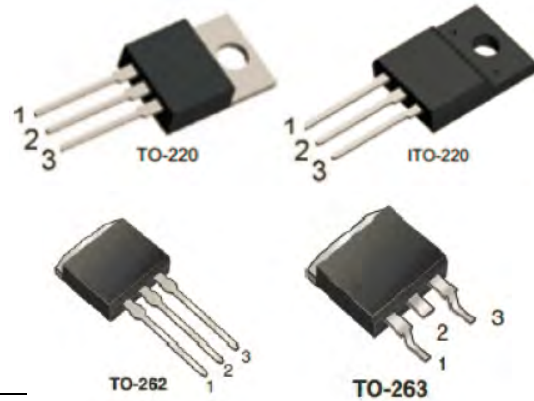
- $R_{DS(ON)}$, $V_{GS}@10V, I_D@3.3A < 1.9\Omega$
- Fast switching capability
- Low gate charge
- Lead free in compliance with EU RoHS directive.
- Green molding compound

PRODUCT SUMMARY

V_{DS} (V)	Current(A)	$R_{DS(on)}$ (Ω)
800	7	1.9 @ $V_{GS}=10V$

Mechanical Data

- Case: TO-220, ITO-220, TO-262, TO-263 Package

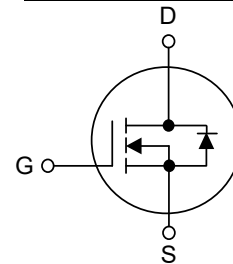


Pin Definition:
 1. Gate
 2. Drain
 3. Source

Ordering Information

Part No.	Package	Packing
DMT7N80-TU	TO-220	50pcs / Tube
DMF7N80-TU	ITO-220	50pcs / Tube
DMK7N80-TU	TO-262	50pcs / Tube
DMG7N80-TU	TO-263	50pcs / Tube
DMG7N80-TR	TO-263	800pcs / 13" Reel

Block Diagram



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	800	V
Gate-Source Voltage		V_{GSS}	± 30	V
Continuous Drain Current	$T_C=25^\circ C$	I_D	7	A
	$T_C=100^\circ C$		4	
Pulsed Drain Current		I_{DM}	26	A
Single Pulse Avalanche Energy ^(Note 1)		E_{AS}	670	mJ
Power Dissipation	TO-220/TO-262/TO-263	P_D	142	W
	ITO-220		45	W
Junction Temperature		T_J	+150	$^\circ C$
Operating Temperature		T_{OPR}	-55 ~ +150	$^\circ C$
Storage Temperature		T_{STG}	-55 ~ +150	$^\circ C$

- Notes: 1. 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.
 2. Repetitive Rating: Pulse width limited by maximum junction temperature
 3. $L=27.5mH$, $I_{AS}=7A$, $V_{DD}=50V$, $R_G=25\Omega$, Starting $T_J=25^\circ C$



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THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220/TO-262/TO-263 ITO-220	θ_{JA}	62.5	$^{\circ}\text{C/W}$
Junction to Case	TO-220/TO-262/TO-263	θ_{JC}	0.9	$^{\circ}\text{C/W}$
	ITO-220		2.6	

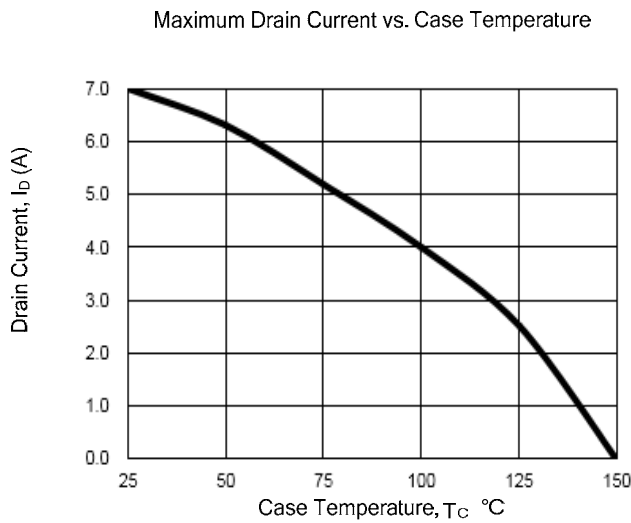
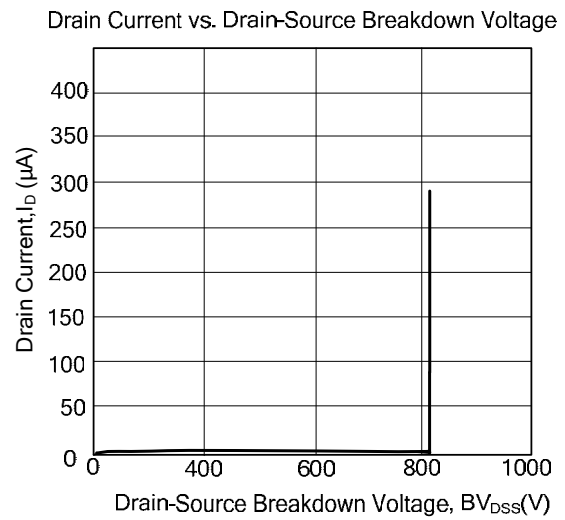
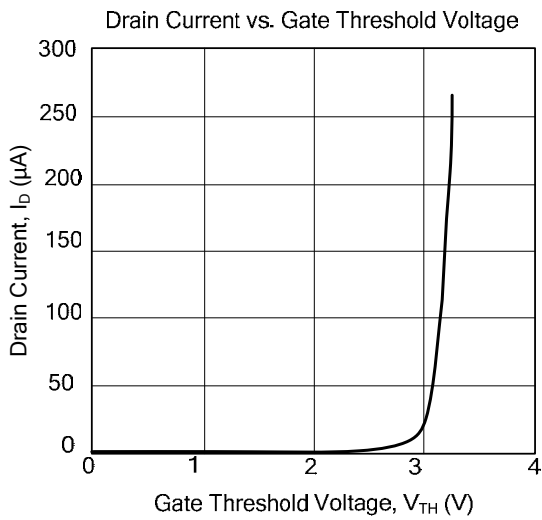
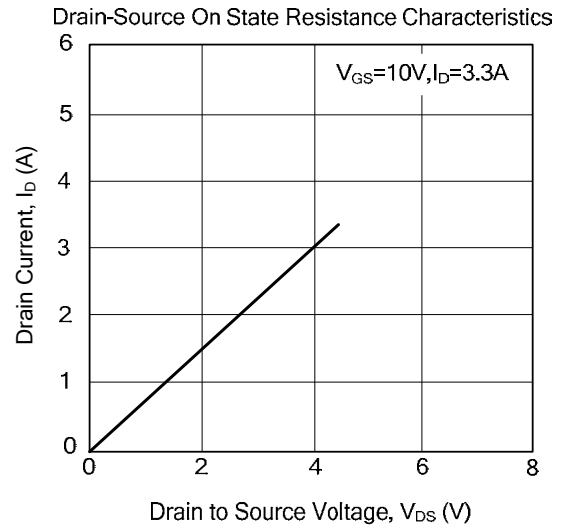
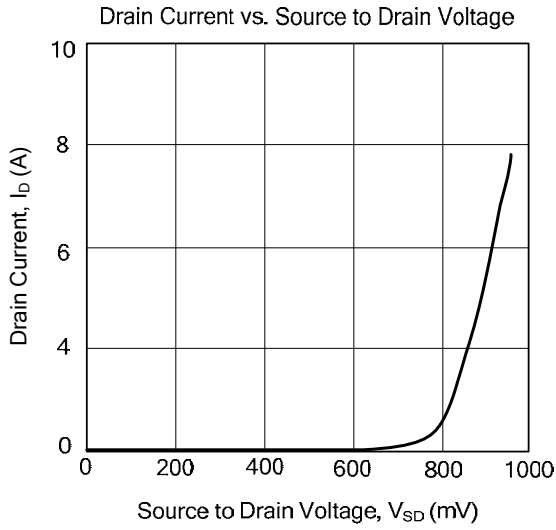
ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	800	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3	-	5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.3A$	-	1.4	1.9	Ω
Gate -Source Drain Current	I_{DSS}	$V_{DS}=800V, V_{GS}=0V$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
Diode Forward Voltage	V_{SD}	$I_S=6.6A, V_{GS}=0V$	-	-	1.4	V
Dynamic (Note 4)						
Total Gate Charge	Q_g	$V_{DS}=120V, V_{GS}=10V,$ $I_D=6.6A, I_G=3.3mA$ (Note 1,2)	-	155	160	nC
Gate-Source Charge	Q_{gs}		-	11	-	
Gate-Drain Charge	Q_{gd}		-	23	-	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	1200	1600	pF
Output Capacitance	C_{oss}		-	120	160	
Reverse Transfer Capacitance	C_{rss}		-	19	30	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=6.6A,$ $R_G=25\Omega$ (Note 1,2)	-	60	80	ns
Turn-On Rise Time	t_r		-	100	140	
Turn-Off Delay Time	$t_{d(off)}$		-	300	330	
Turn-Off Fall Time	t_f		-	125	150	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	6.6	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	-	-	26	A
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=6.6A,$ $di_F/dt=100A/\mu s$ (Note 1)	-	650	-	ns
Reverse Recovery Charge	Q_{rr}		-	7.0	-	μC

Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
 2. Essentially independent of operating temperature

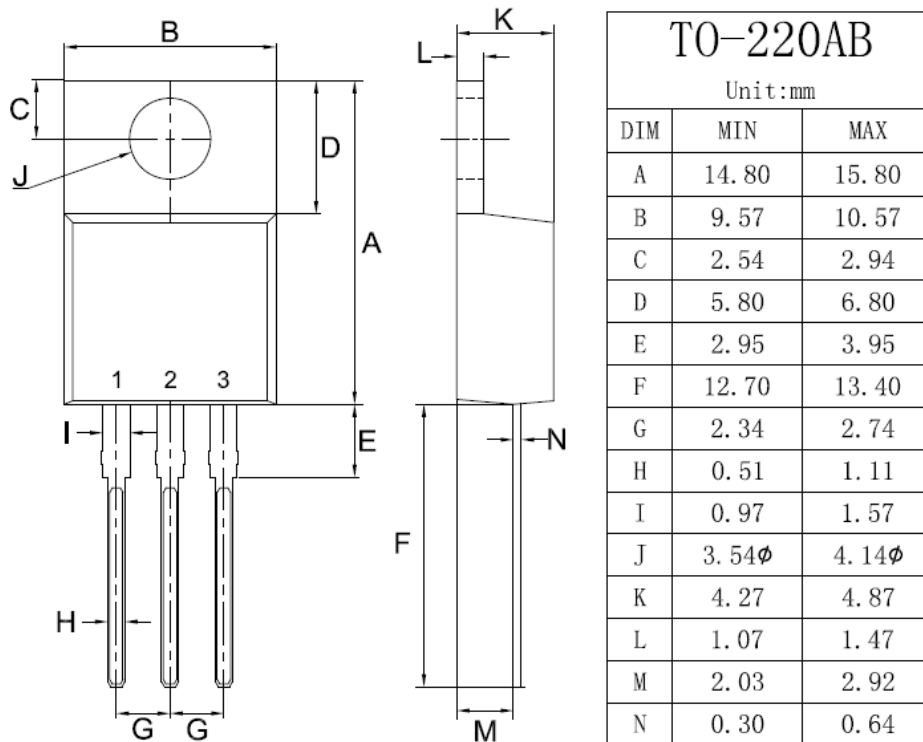


TYPICAL CHARACTERISTICS

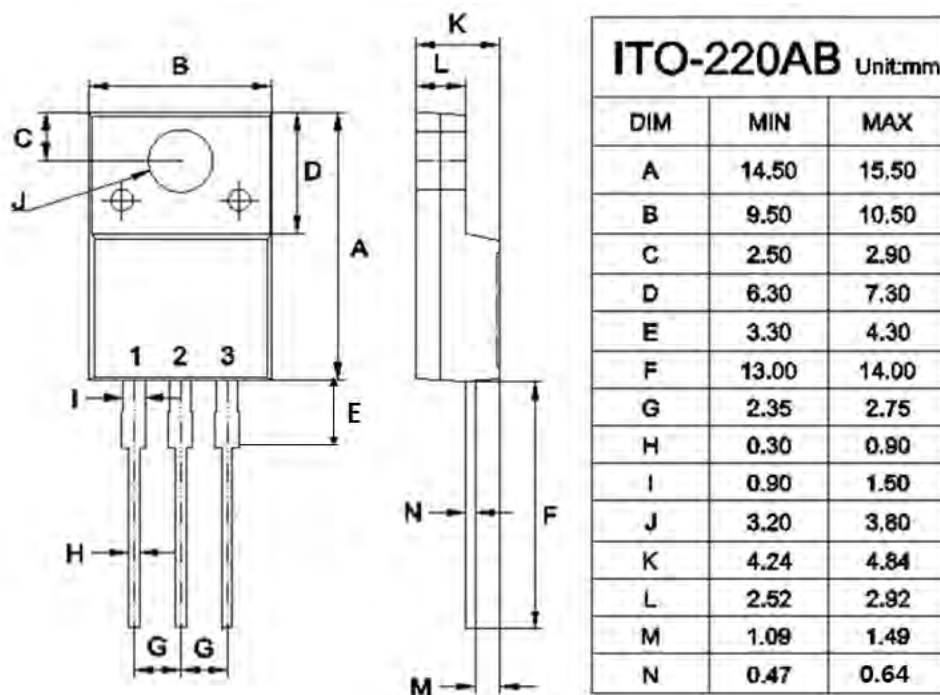




TO-220 Mechanical Drawing

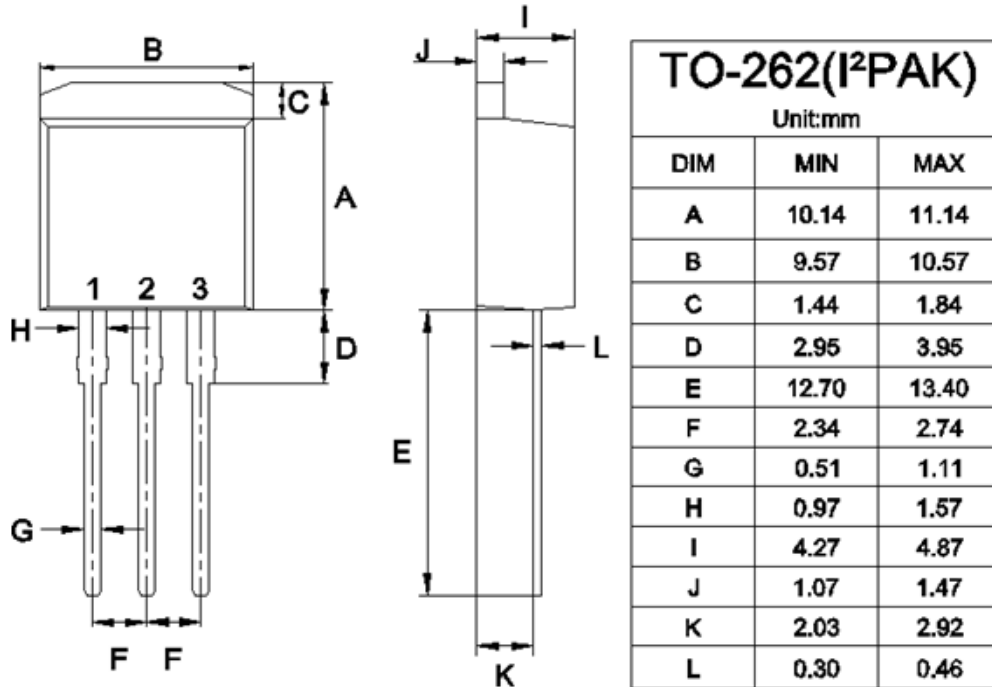


ITO-220 Mechanical Drawing





TO-262 Mechanical Drawing



TO-263 Mechanical Drawing

