7N80

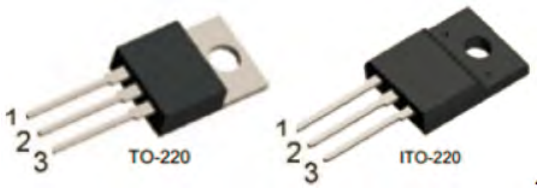
800V N-Channel Power MOSFET

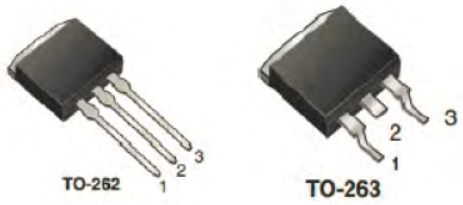
Features

- $R_{DS(ON)}$), V_{GS}@10V,ID@3.3A<1.9Ω
- 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





Pin Definition:

1. Gate
2. Drain
3. Source

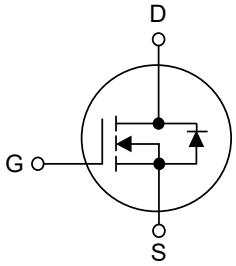
Mechanical Data

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

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°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°C T_C=100°C	I_D	7 4	A
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	°C
Operating Temperature		T_{OPR}	-55 ~ +150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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. Repetit e Rating: Pulse width limited by maximum junction temperature
3. L=27.5mH, I_{AS}=7A, V_{DD}= 50V, R_G=25Ω, Starting T_J=25°C

THERMAL DATA

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

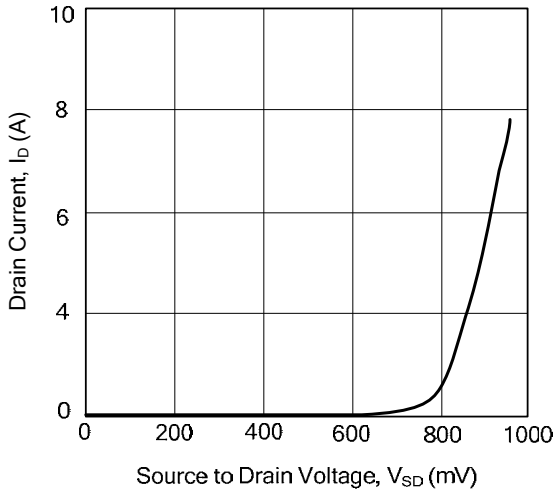
ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250uA	800	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	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	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±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	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	1200	1600	pF
Output Capacitance	Coss		-	120	160	
Reverse Transfer Capacitance	Crss		-	19	30	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=400V, I_D =6.6A, R_G=25Ω (Note 1,2)	-	60	80	ns
Turn-On Rise Time	t_r		-	100	140	
Turn-Off Delay Time	$td_{(off)}$		-	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	trr	V_{GS}=0V, I_S=6.6A, dI_F/dt=100A/μs (Note 1)	-	650	-	ns
Reverse Recovery Charge	Qrr		-	7.0	-	uC

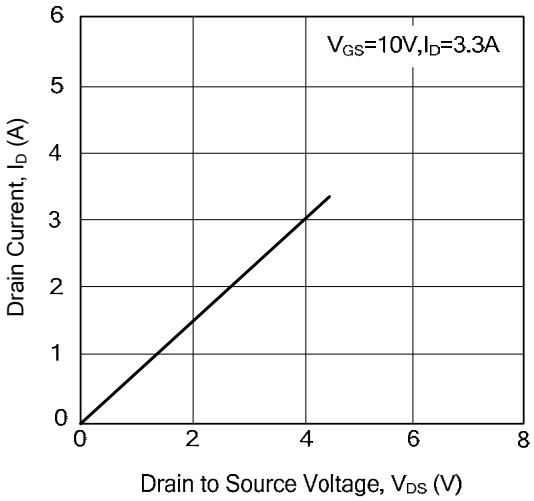
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
2. Essenti ly independent of operating temperature

TYPICAL CHARACTERISTICS

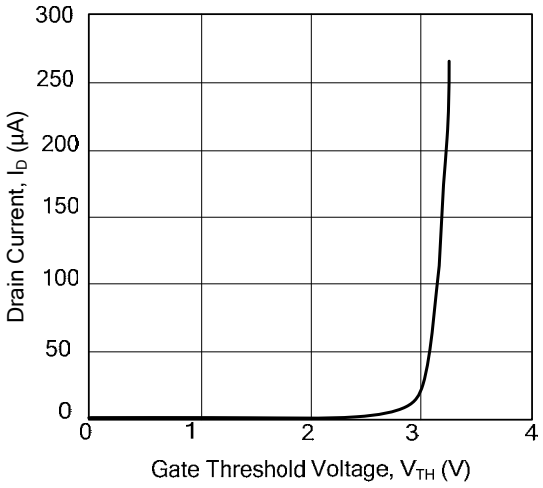
Drain Current vs. Source to Drain Voltage



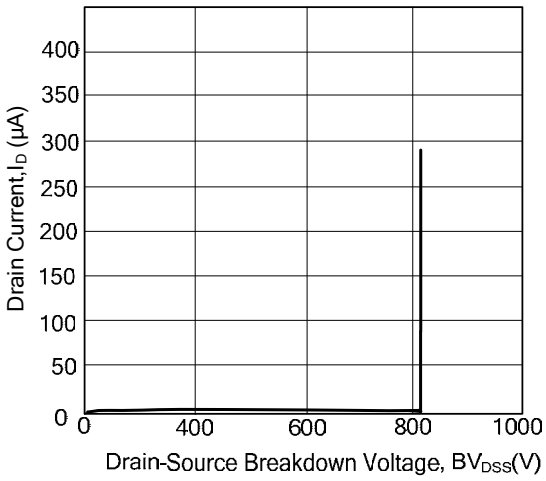
Drain-Source On State Resistance Characteristics



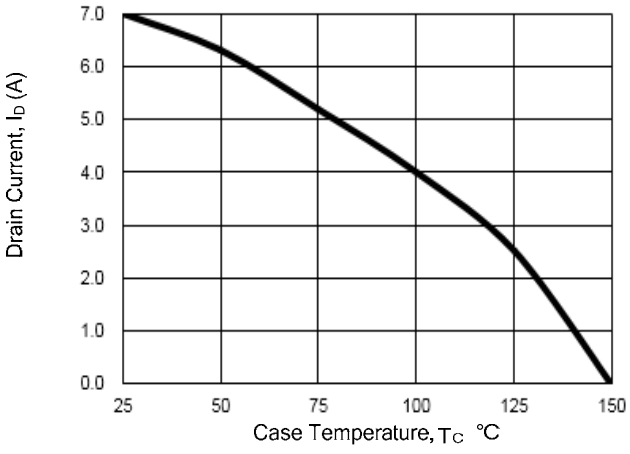
Drain Current vs. Gate Threshold Voltage



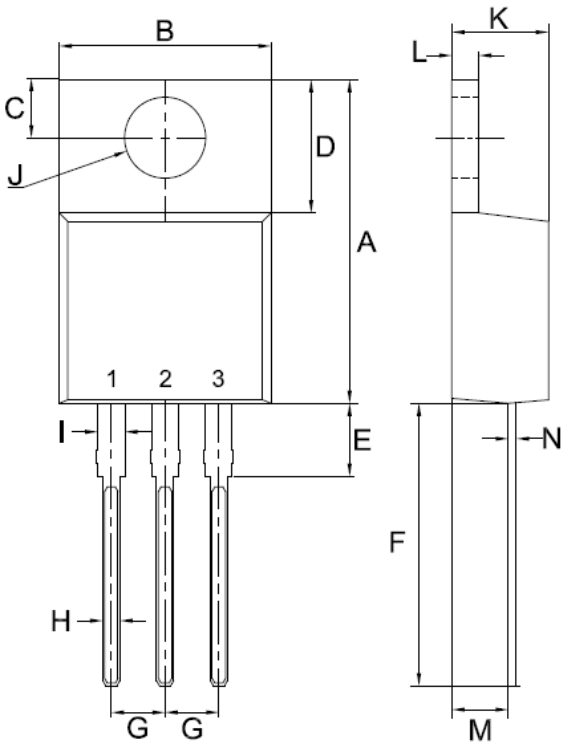
Drain Current vs. Drain-Source Breakdown Voltage



Maximum Drain Current vs. Case Temperature

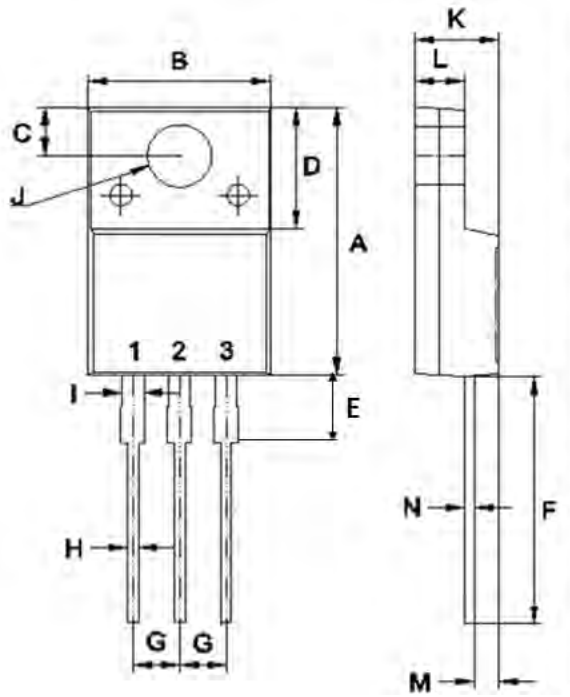


TO-220 Mechanical Drawing



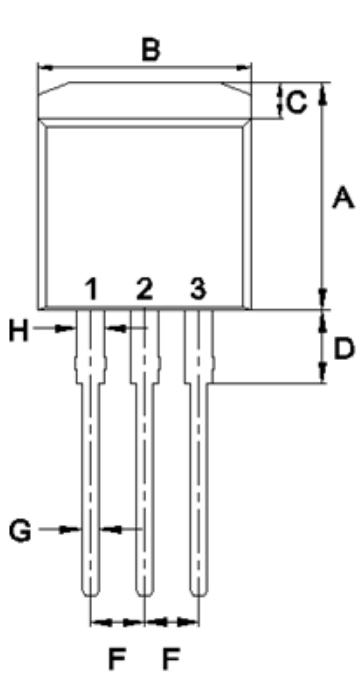
TO-220AB Unit:mm		
DIM	MIN	MAX
A	14.80	15.80
B	9.57	10.57
C	2.54	2.94
D	5.80	6.80
E	2.95	3.95
F	12.70	13.40
G	2.34	2.74
H	0.51	1.11
I	0.97	1.57
J	3.54ϕ	4.14ϕ
K	4.27	4.87
L	1.07	1.47
M	2.03	2.92
N	0.30	0.64

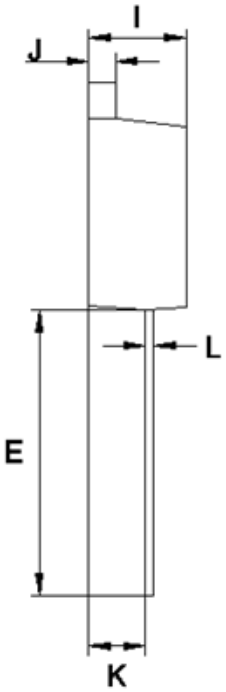
ITO-220 Mechanical Drawing



ITO-220AB Unit:mm		
DIM	MIN	MAX
A	14.50	15.50
B	9.50	10.50
C	2.50	2.90
D	6.30	7.30
E	3.30	4.30
F	13.00	14.00
G	2.35	2.75
H	0.30	0.90
I	0.90	1.50
J	3.20	3.80
K	4.24	4.84
L	2.52	2.92
M	1.09	1.49
N	0.47	0.64

TO-262 Mechanical Drawing

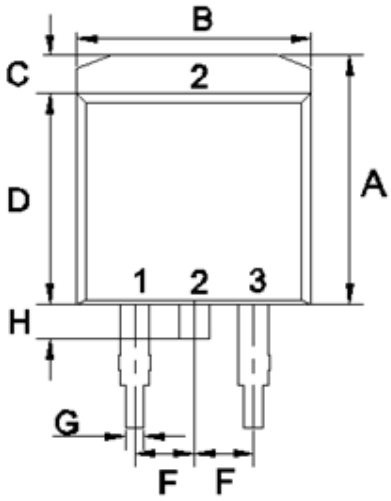


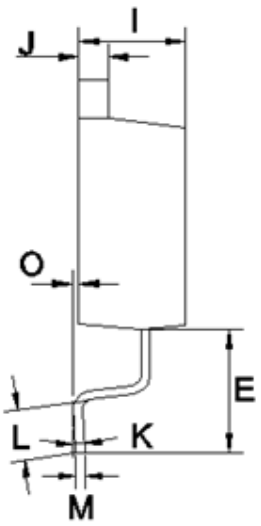


TO-262(I²PAK)
Unit:mm

DIM	MIN	MAX
A	10.14	11.14
B	9.57	10.57
C	1.44	1.84
D	2.95	3.95
E	12.70	13.40
F	2.34	2.74
G	0.51	1.11
H	0.97	1.57
I	4.27	4.87
J	1.07	1.47
K	2.03	2.92
L	0.30	0.46

TO-263 Mechanical Drawing





TO-263 (D² PAK)
Unit:mm

DIM	MIN	MAX
A	10.44	10.84
B	9.81	10.21
C	1.44	1.84
D	8.80	9.20
E	4.46	4.66
F	2.44	2.64
G	0.61	1.01
H	0.70	1.30
I	4.27	4.87
J	1.07	1.47
K	0°	8°
L	2.10	2.50
M	0.30	0.46
O	0	0.25

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