

Features

- $R_{DS(ON)} < 3.6\Omega @ V_{GS} = 10V, I_D = 1.5A$
- Fast switching capability
- Lead free in compliance with EU RoHS directive.
- Improved dv/dt capability, high ruggedness

Mechanical Data

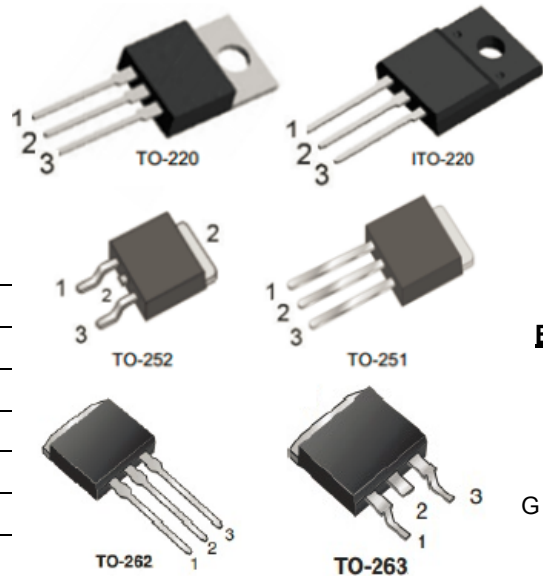
- Case: TO-251, TO-252, TO-220, ITO-220
TO-262, TO-263 Package

Ordering Information

Part No.	Package	Packing
DMP3N60-TU	TO-251	75pcs / Tube
DMD3N60-TR	TO-252	2.5Kpcs / 13" Reel
DMD3N60-TU	TO-252	75pcs / Tube
DMT3N60-TU	TO-220	50pcs / Tube
DMF3N60-TU	ITO-220	50pcs / Tube
DMK3N60-TU	TO-262	50pcs / Tube
DMG3N60-TU	TO-263	50pcs / Tube
DMG3N60-TU	TO-263	800pcs / 13" Reel

PRODUCT SUMMARY

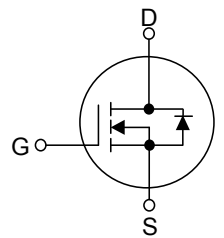
V_{DS} (V)	$R_{DS(on)}$ (Ω)	Current
600	3.6 @ $V_{GS} = 10V$	3A



Pin Definition:

1. Gate
2. Drain
3. Source

Block Diagram



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

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V_{DSS}	600	V	
Gate-Source Voltage	V_{GSS}	± 30	V	
Avalanche Current (Note 2)	I_{AR}	3.0	A	
Continuous Drain Current	I_D	3.0	A	
Pulsed Drain Current (Note 2)	I_{DM}	12	A	
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	200	mJ
Power Dissipation	TO-220/TO-262/TO-263	P_D	75	W
	ITO-220		34	W
	TO-251/TO-252		50	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 T_J .

3. $L = 44.4mH, I_{AS} = 3A, V_{DD} = 50V, R_G = 25 \Omega, \text{Starting } T_J = 25^\circ C$

THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220/ITO-220	θ_{JA}	62.5	°C/W
	TO-262/TO-263			
	TO-251/ TO-252		110	
Junction to Case	TO-220/TO-262/TO-263	θ_{JC}	1.70	°C/W
	ITO-220		3.70	
	TO-251/ TO-252		2.6	

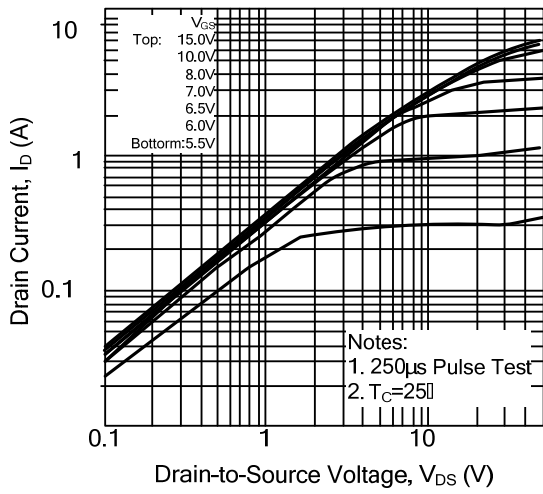
ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	600			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS} = 600V, V_{GS} = 0V$			10	μA
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS} = 30V, V_{DS} = 0V$			100	nA
	Reverse		$V_{GS} = -30V, V_{DS} = 0V$			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0		4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10V, I_D=1.5A$			3.6	Ω
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$		350	450	pF
Output Capacitance		C_{OSS}			50	65	pF
Reverse Transfer Capacitance		C_{RSS}			5.5	7.5	pF
SWITCHING CHARACTERISTICS							
Turn-On Delay Time		$t_{D(ON)}$	$V_{DD}=30V, I_D=0.5A,$ $R_G=25\Omega$ (Note 1, 2)		35	50	ns
Turn-On Rise Time		t_R			60	70	ns
Turn-Off Delay Time		$t_{D(OFF)}$			100	150	ns
Turn-Off Fall Time		t_F			65	75	ns
Total Gate Charge		Q_G	$V_{DS}=50V, I_D=1.3A, I_G=100\mu A$ $V_{GS}=10V$ (Note 1, 2)		18.5	23	nC
Gate-Source Charge		Q_{GS}			5.2	-	nC
Gate-Drain Charge		Q_{GD}			4.9	-	nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		V_{SD}	$V_{GS}=0V, I_S=3.0A$			1.4	V
Maximum Continuous Drain-Source Diode Forward Current		I_S				3.0	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}				12	A
Reverse Recovery Time		t_{rr}	$V_{GS} = 0V, I_S = 3A,$		210		ns
Reverse Recovery Charge		Q_{RR}	$dI_F/dt = 100 A/\mu s$ (Note 1)		1.2		μC

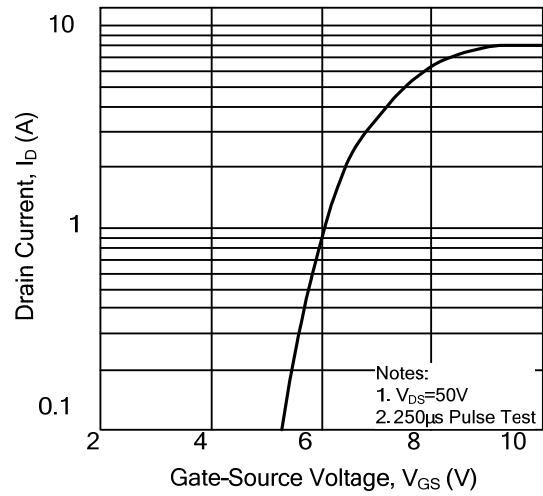
Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
 2. Essentially independent of operating temperature

TYPICAL CHARACTERISTICS

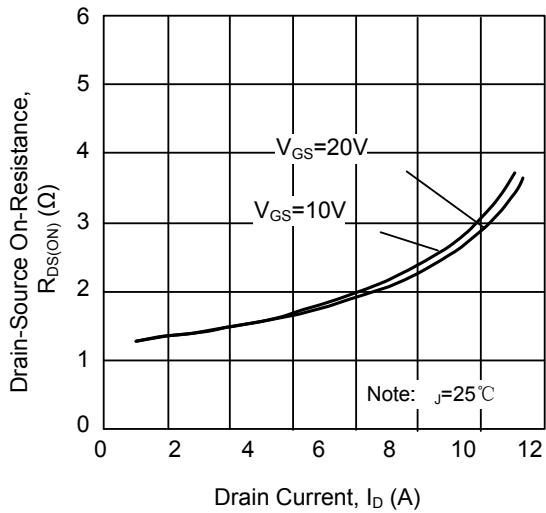
On-State Characteristics



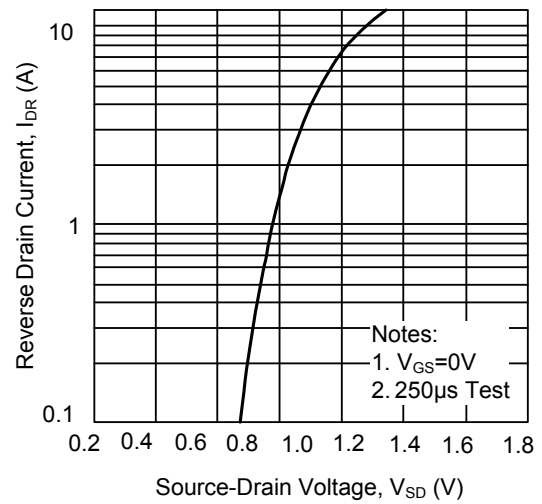
Transfer Characteristics



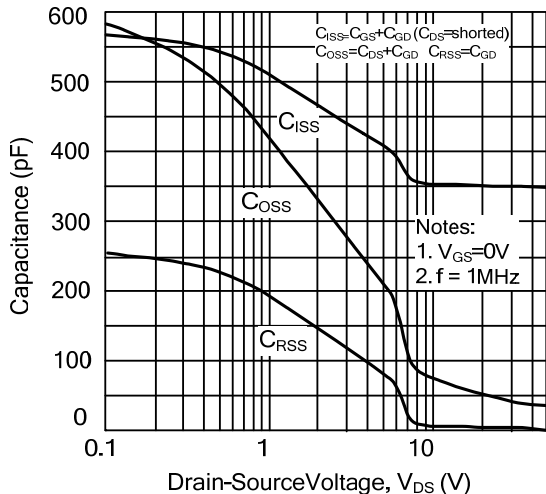
On-Resistance Variation vs. Drain Current and Gate Voltage



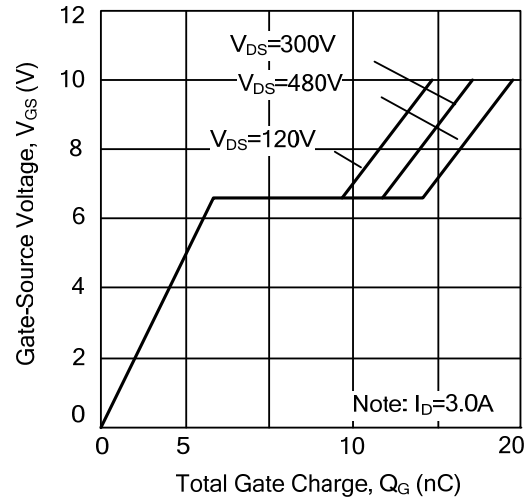
On State Current vs. Allowable Case Temperature



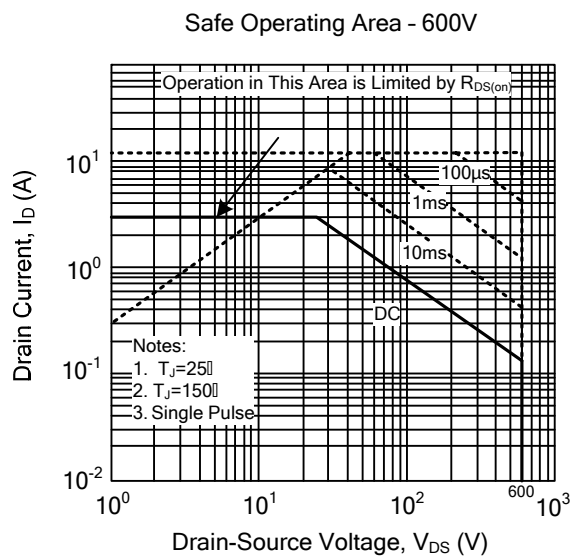
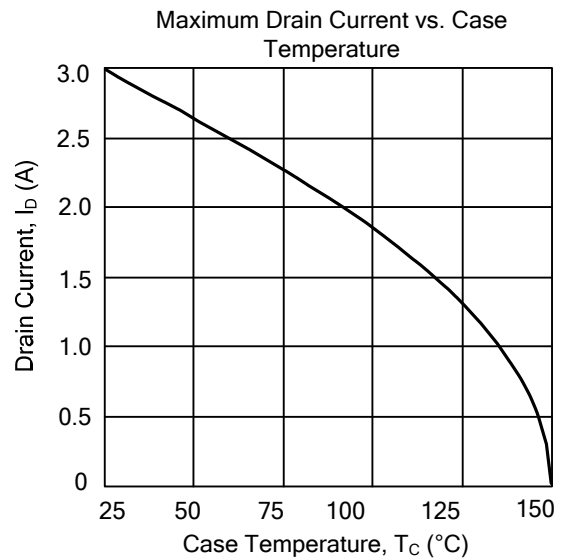
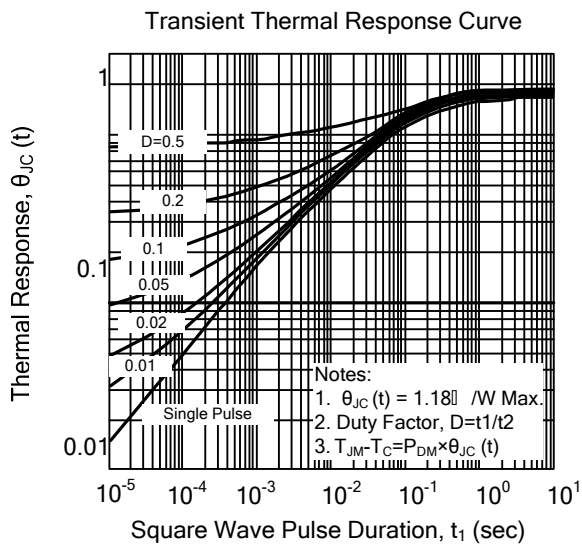
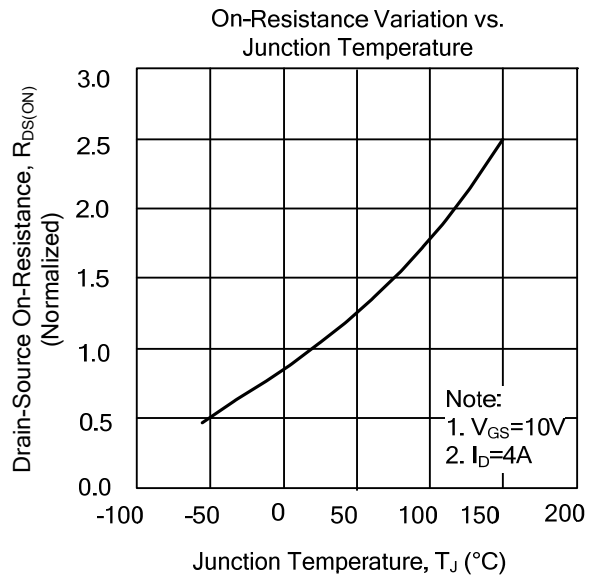
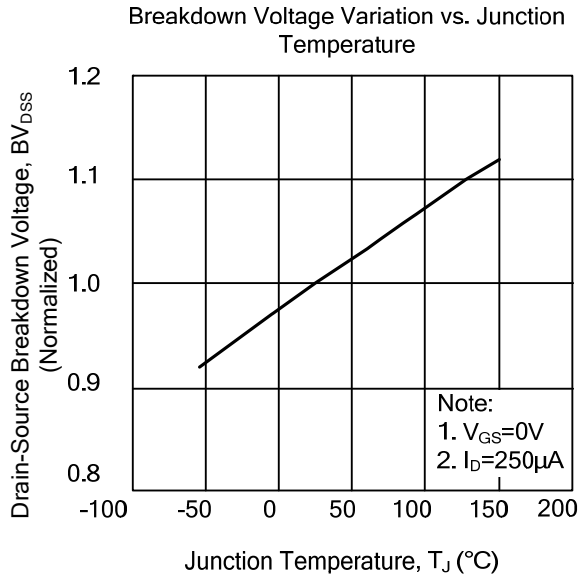
Capacitance Characteristics (Non-Repetitive)



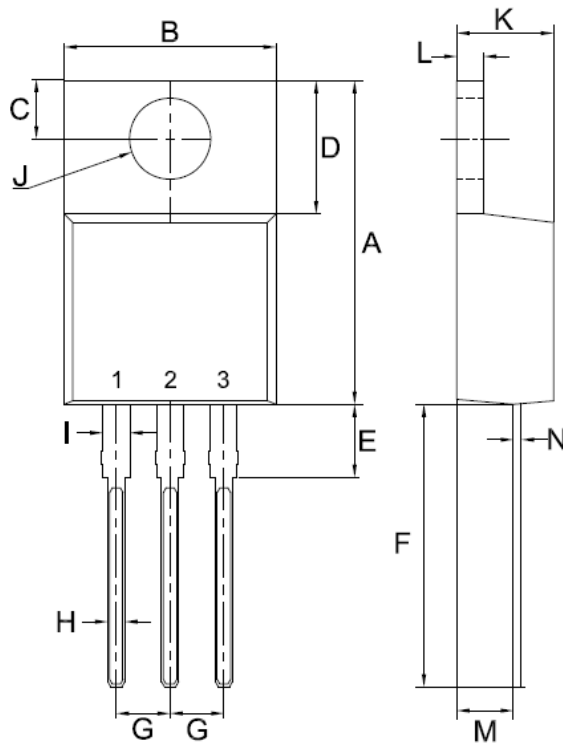
Gate Charge Characteristics



TYPICAL CHARACTERISTICS

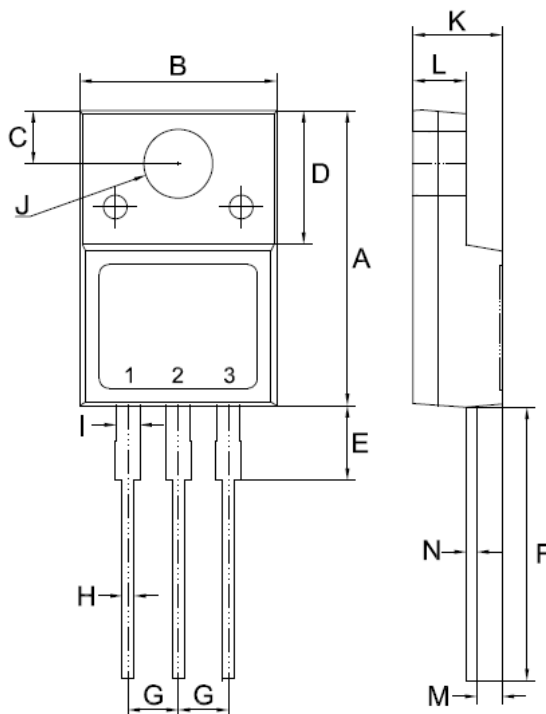


TO-220 Mechanical Drawing



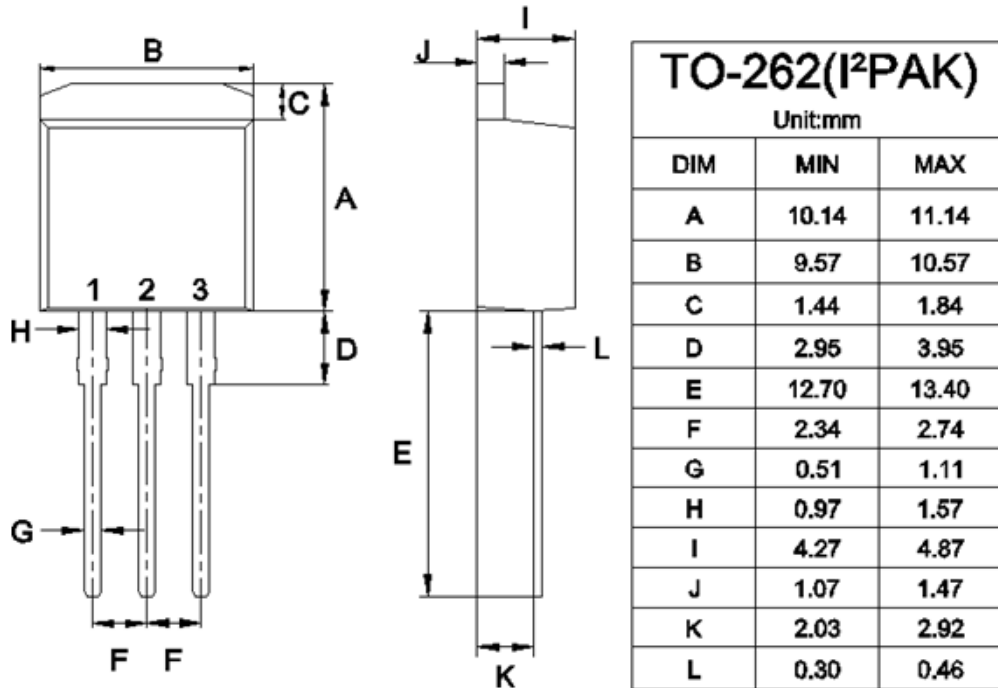
TO-220AB		
Unit:mm		
DIM	MIN	MAX
A	14.80	15.80
B	9.57	10.57
C	2.54	2.94
D	5.80	6.80
E	2.95	3.95
F	12.70	13.40
G	2.34	2.74
H	0.51	1.11
I	0.97	1.57
J	3.54 ϕ	4.14 ϕ
K	4.27	4.87
L	1.07	1.47
M	2.03	2.92
N	0.30	0.64

ITO-220 Mechanical Drawing

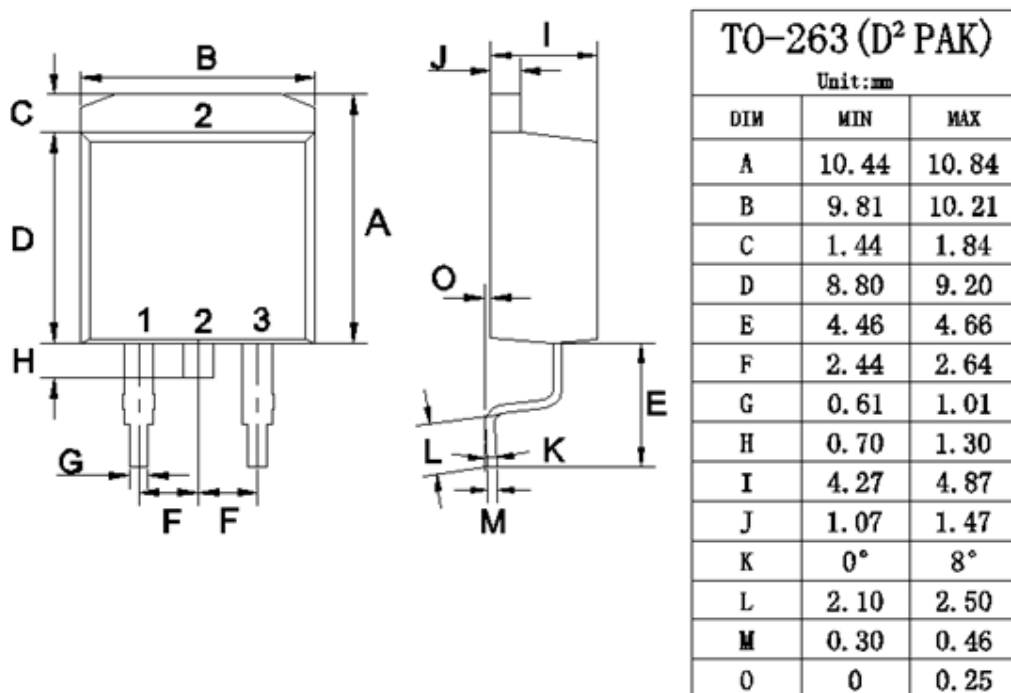


ITO-220AB		
Unit:mm		
DIM	MIN	MAX
A	14.50	15.50
B	9.50	10.50
C	2.50	2.90
D	6.30	7.30
E	3.30	4.30
F	13.00	14.00
G	2.35	2.75
H	0.30	0.90
I	0.90	1.50
J	3.20	3.80
K	4.24	4.84
L	2.52	2.92
M	1.09	1.49
N	0.47	0.64

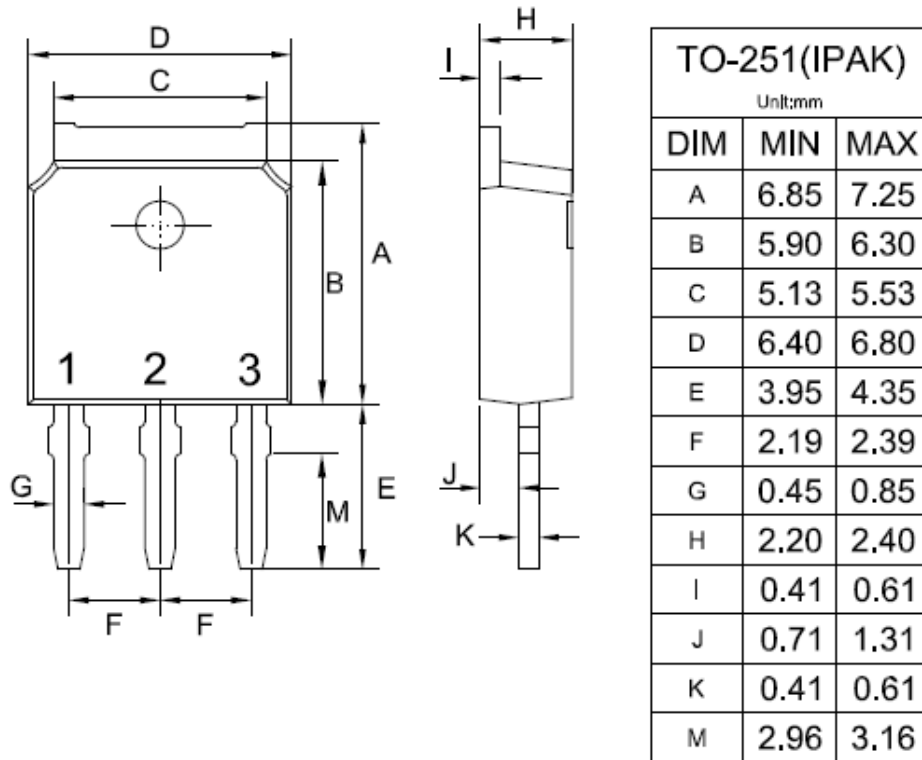
TO-262 Mechanical Drawing



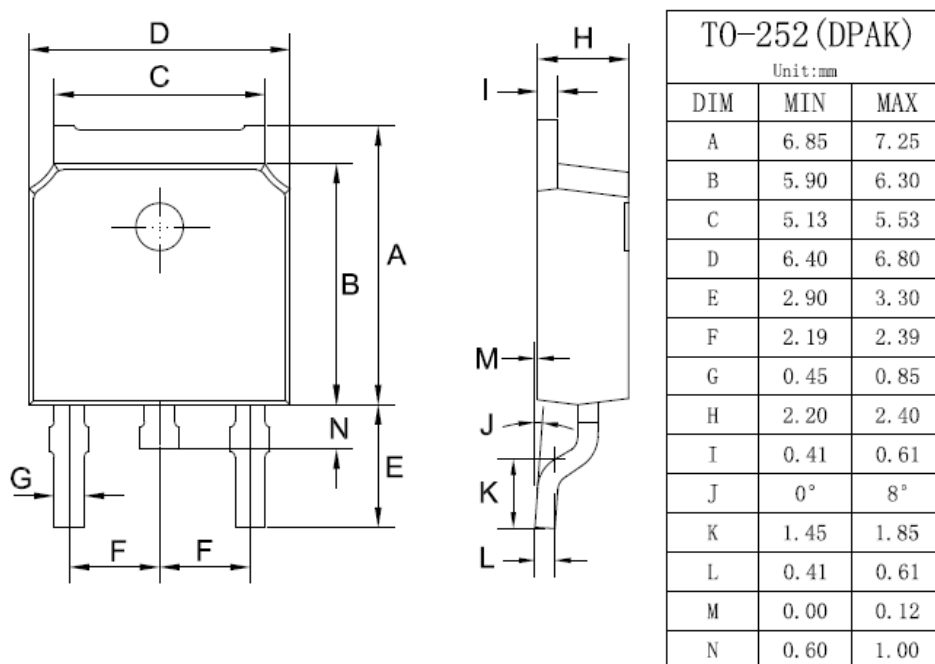
TO-263 Mechanical Drawing



TO-251 Mechanical Drawing



TO-252 Mechanical Drawing



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