N -Channel Power MOSFET

FEATURES

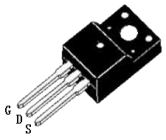
- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

- Power switch circuit of adaptor and charger.

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275℃ maximum,10s per JESD 22-B106



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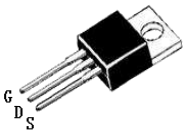

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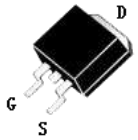

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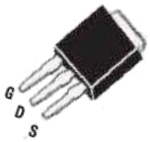
TO-252

MAIN CHARACTERISTICS

I_D	7A
V_{DSS}	700V
R_{DSON}-typ （@V_{GS}=10V）	1.45Ω



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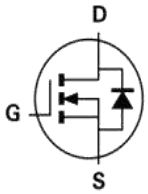


Product specification classification

Part Number	Package	Marking	Pack
KWNJ7N70	TO-220AB	NJ7N70	Tube
KWNJ7N70F	TO-220F(0.5mm)	NJ7N70F	Tube
KWNJ7N70B	TO-263	NJ7N70B	Tube
KWNJ7N70B	TO-263	NJ7N70B	Tape
KWNJ7N70A	TO-251	NJ7N70A	Tube
KWNJ7N70D	TO-252	NJ7N70D	Tape

Characteristics	Symbol	Value			Unit
		220AB/263	220F	251/252	
Drain-Source Voltage	V_{DS}	700			V
Gate-Source Voltage	V_{GS}	±30			V
Continue Drain Current	I_D	7			A
Pulsed Drain Current (Note1)	I_{DM}	28			A
Power Dissipation	P_D	100	35	100	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	350			mJ
Operating Temperature Range	T_J	150			°C
Storage Temperature Range	T_{STG}	-55 to +150			°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.25	3.57	1.25	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	62.5	100	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

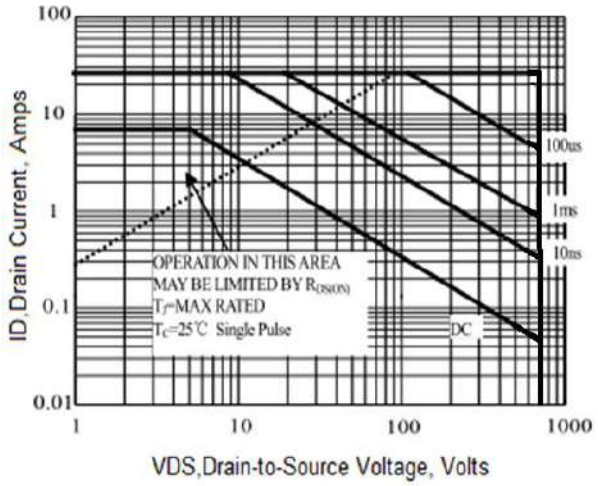
Electrical Characteristics at Tc=25°C unless otherwise specified

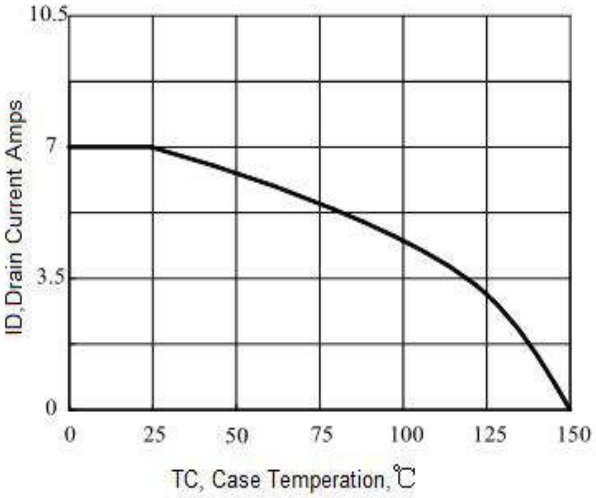
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	700	715	-	V
Drain-Source Leakage Current	V_{DS} = 700 V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS} = ± 30 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	V_{GS} = 10 V, I_D = 3.5 A	$R_{DS(on)}$	-	1.45	1.86	Ω
Forward Transconductance	V_{DS} = 15 V, I_D = 3.5 A	gfs	-	6.5	-	S
Input Capacitance	V_{GS} = 0 V, V_{DS} = 2 V, f = 200 KHz	C_{iss}	-	1334	-	pF
Output Capacitance		C_{oss}	-	92	-	pF
Reverse Transfer Capacitance		C_{rss}	-	5	-	pF
Turn-on Delay Time(Note2)	I_D = 7 A, V_{DD} = 325 V, R_G= 10Ω	$t_{d(ON)}$	-	18	-	ns
Rise Time(Note2)		t_r	-	19	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	39	-	ns
Fall Time(Note2)		t_f	-	18	-	ns
Total Gate Charge(Note2)	I_D = 7 A, V_{DD} = 520 V, V_{GS} = 10 V	Q_G	-	22	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	5	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	9	-	nC

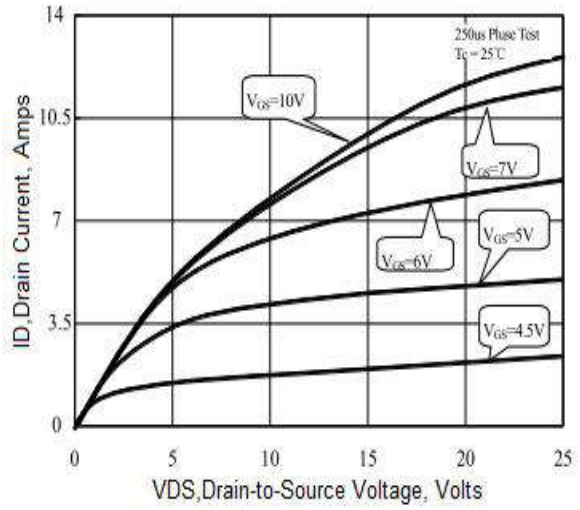
Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

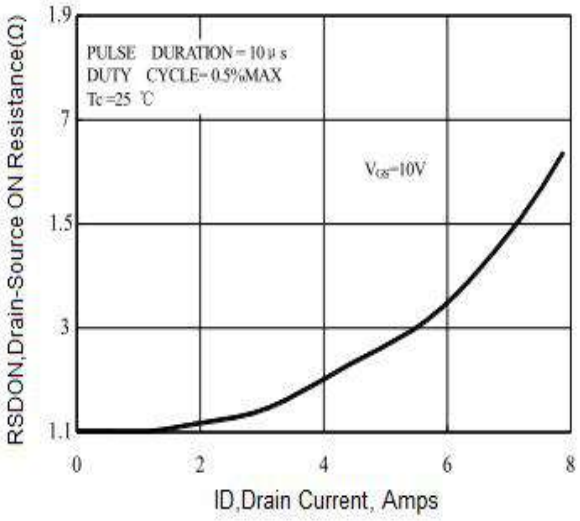
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	7	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	28	A
Drain-Source Diode Forward Voltage	I_{SD} = 7 A	V_{SD}	-	-	1.4	V
Reverse Recovery Time(Note2)	I_{SD} = 7 A, V_{GS} = 0 V, dI_F / dt = 100 A/μs	trr	-	370	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	1.9	-	μC

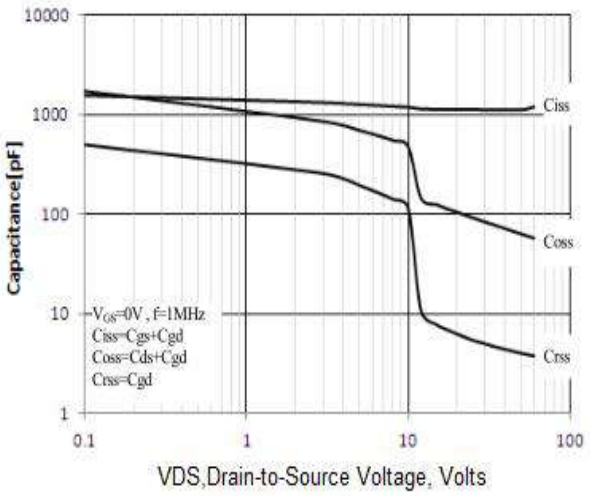
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

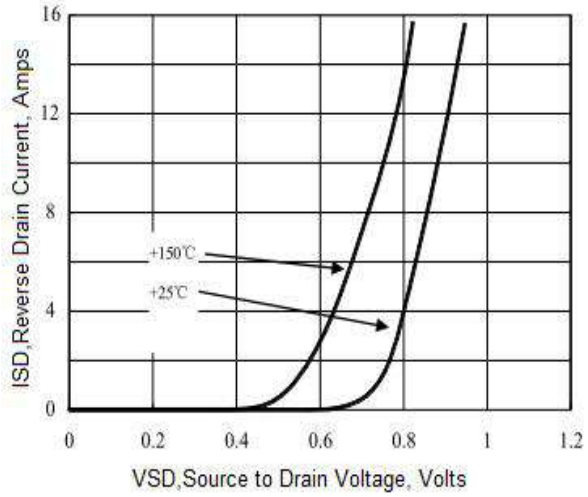

ID,Drain Current, Amps
VDS,Drain-to-Source Voltage, Volts
100us
1ms
10ms
DC
OPERATION IN THIS AREA
MAY BE LIMITED BY RDS(ON)
TJ=MAX RATED
TC=25℃ Single Pulse


ID,Drain Current Amps
TC, Case Temperation, ℃

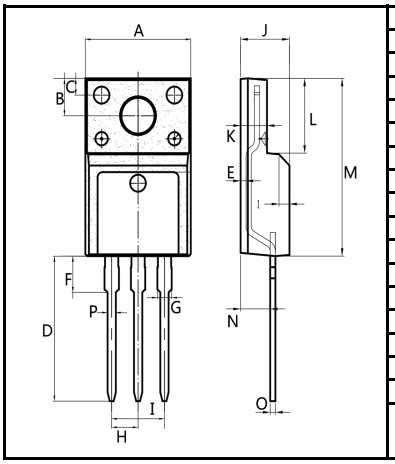

ID,Drain Current, Amps
VDS,Drain-to-Source Voltage, Volts
250us Pluse Test
Tc=25℃
VGS=10V
VGS=7V
VGS=6V
VGS=5V
VGS=4.5V


RSDON,Drain-Source ON Resistance(Ω)
ID,Drain Current, Amps
PULSE DURATION=10μs
DUTY CYCLE=0.5%MAX
Tc=25 ℃
VGS=10V


Capacitance[pF]
VDS,Drain-to-Source Voltage, Volts
Ciss
Coss
Crss
VGS=0V, f=1MHz
Ciss=Cgs+Cgd
Coss=Cds+Cgd
Crss=Cgd


ISD,Reverse Drain Current, Amps
VSD,Source to Drain Voltage, Volts
+150℃
+25℃

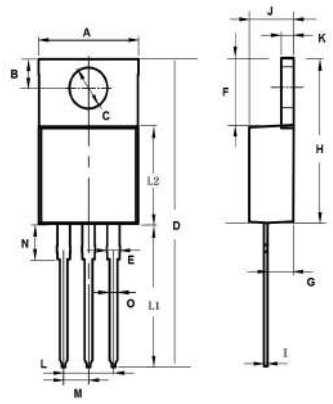
TO-220F



Dim.	Min.	Max.
A	9.95	10.35
B	2.95	3.25
C	1.25	1.45
D	12.8	13.2
E	0.4	0.6
F	2.8	3.5
G	1.3	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.5	5
K	2.45	2.65
L	6.5	6.8
M	15.4	16
N	2.75	3.05
O	0.45	0.55
P	0.7	0.9

All Dimensions in millimeter

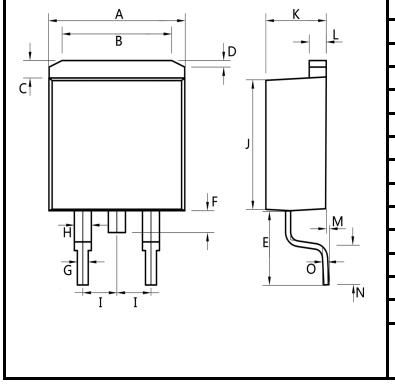
TO-220AB



Dim.	Min.	Max.
A	10.15	10.35
B	2.5	2.95
C	3.7	3.99
D	28.5	29.5
E	1.2	1.4
F	6.2	6.55
G	2.4	2.6
H	15	16
I	0.35	0.42
J	4.3	4.55
K	1.25	1.35
L	Typ5.08	
L1	13	14
L2	8.5	9.5
M	Typ2.54	
N	2.8	3.7
O	0.7	0.9

All Dimensions in millimeter

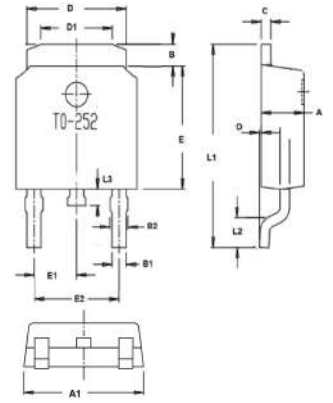
TO-263



Dim.	Min.	Max.
A	10.1	10.35
B	6	8
C	1.2	1.5
D	0.55	1
E	4.3	5.3
F	1.4	1.6
G	0.75	0.85
H	1.2	1.5
I	Typ2.54	
J	8.5	9.5
K	4.3	4.55
L	1.25	1.35
M	0.02	0.23
N	2.2	2.8
O	0.3	0.4

All Dimensions in millimeter

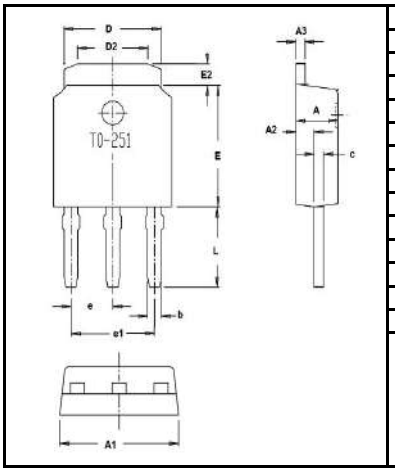
TO-252



Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.95	1.55
B1	0.6	0.8
B2	0.75	0.95
C	Typ0.5	
D	5.3	5.5
D1	3.65	4.05
E	5.8	6.4
E1	Typ2.3	
E2	Typ4.6	
O	0	0.15
L1	9	11
L2	Typ1.5	
L3	0.7	1

All Dimensions in millimeter

TO-251



Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
A2	0.9	1.1
A3	Typ0.5	
b	0.6	0.8
c	0.4	0.5
D	5.3	5.5
D2	3.65	4.05
E	5.8	6.4
E2	0.9	1.4
e	Typ2.29	
e1	Typ4.58	
L	3.7	4.3

All Dimensions in millimeter