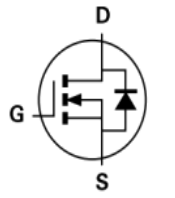
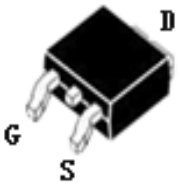
NJ100N04 N-Channel Power MOSFET





TO-252

MAIN CHARACTERISTICS

I_D	100A
V_{DSS}	40V
R_{DSON}-typ （@V_{GS}=10V）	4.5mΩ

FEATURES

- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge
- Lead free product is acquired

APPLICATIONS

- Load Switch
- PWM Application
- Power management

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

Product specification classification

Part Number	Package	Mode Name	Pack
NJ100N04	TO-252	NJ100N04	Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continue Drain Current	I_D	100	A
Pulsed Drain Current (Note1)	I_{DM}	400	A
Power Dissipation	P_D	60	W
Single Pulse Avalanche Energy (Note5)	E_{AS}	120	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case(Note 2)	$R_{\theta JC}$	2.1	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	34	°C/W

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}	40	-	-	V
Drain-Source Leakage Current	V_{DS} = 40V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS} = ± 20 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	1.3	-	2.3	V
Drain-Source On-State Resistance (Note	V_{GS} = 10 V, I_D = 30 A	$R_{DS(on)}$	-	4.5	5.9	mΩ
	V_{GS} = 4.5 V, I_D = 20 A	$R_{DS(on)}$		6.6	8.6	mΩ
Input Capacitance	V_{GS} = 0 V, V_{DS} = 20 V, f = 1 MHz	C_{iss}	-	3030	-	pF
Output Capacitance		C_{oss}	-	215	-	pF
Reverse Transfer Capacitance		C_{rss}	-	180	-	pF
Turn-on Delay Time	VDS=20V, ID=30A VGS=10V,RG=3Ω	$t_{d(ON)}$	-	11	-	ns
Rise Time		t_r	-	32	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	52	-	ns
Fall Time		t_f	-	13	-	ns
Total Gate Charge	VDS=20V,ID=30A, VGS=10V	Q_G	-	59	-	nC
Gate to Source Charge		Q_{GS}	-	12	-	nC
Gate to Drain Charge		Q_{GD}	-	12	-	nC

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

Characteristics	Test Condition	Symbo	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current (Note 2)		I_S	-	-	100	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	400	A
Drain-Source Diode Forward Voltage (Note 3)	I_{SD} = 30A	V_{SD}	-	-	1.2	V
Reverse Recovery Time	I_S = I_F, ISD=20A,V_{GS} = 0 V, dI / dt = 100 A/μs (Note3)	trr	-	13	-	ns
Reverse Recovery Charge		Qrr	-	7	-	μC

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

RATINGS AND CHARACTERISTIC CURVES

Figure 1: Output Characteristics

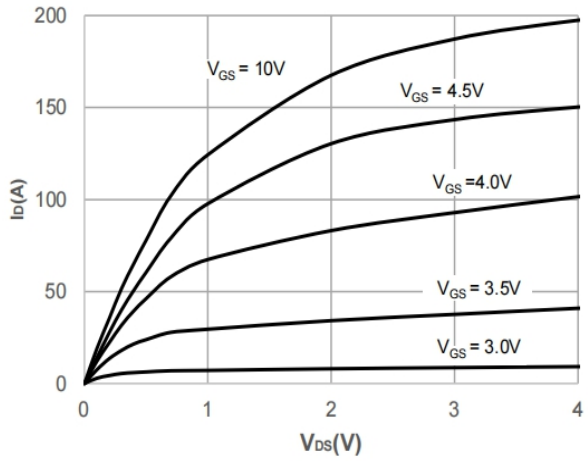


Figure 2: Typical Transfer Characteristics

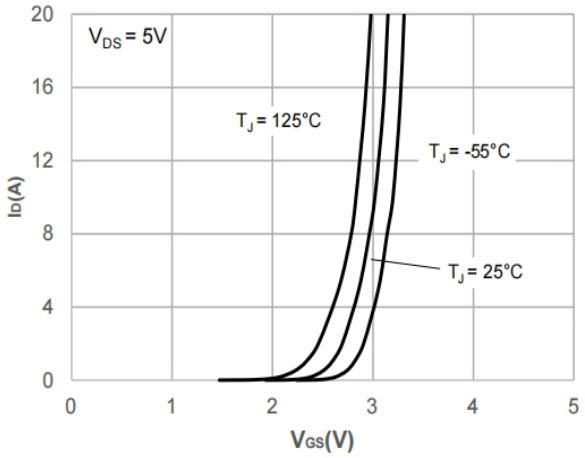


Figure 3: On-resistance vs. Drain Current

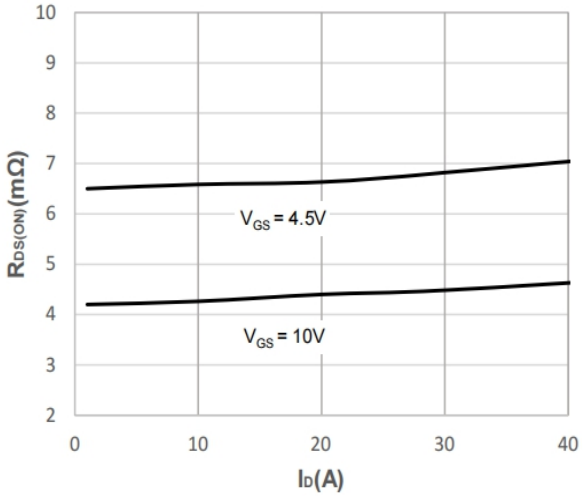


Figure 4: Body Diode Characteristics

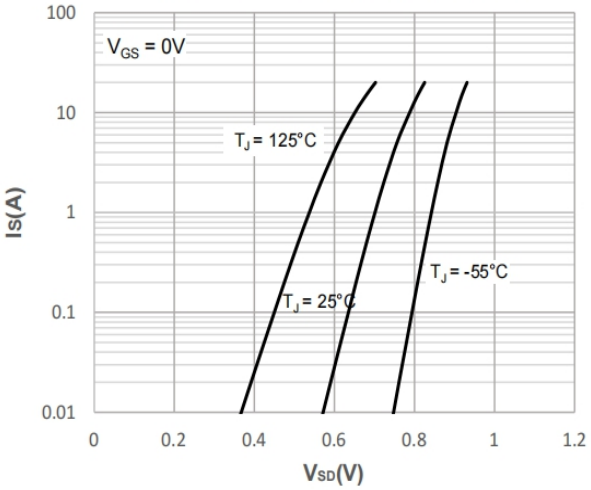


Figure 5: Gate Charge Characteristics

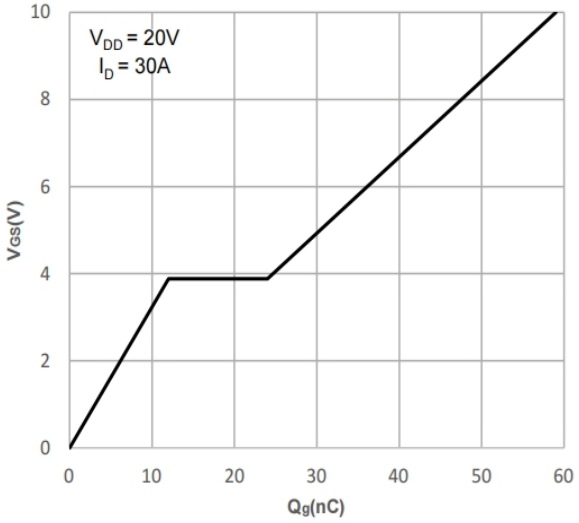
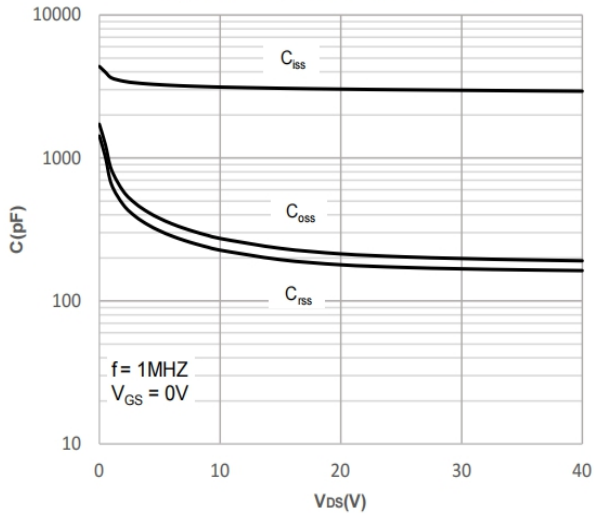


Figure 6: Capacitance Characteristics



RATINGS AND CHARACTERISTIC CURVES

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

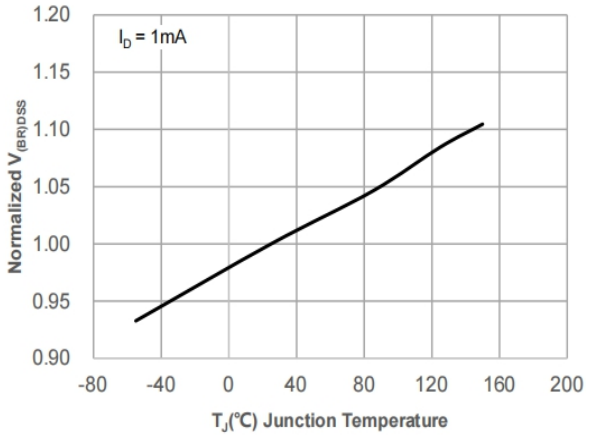


Figure 8: Normalized on Resistance vs. Junction Temperature

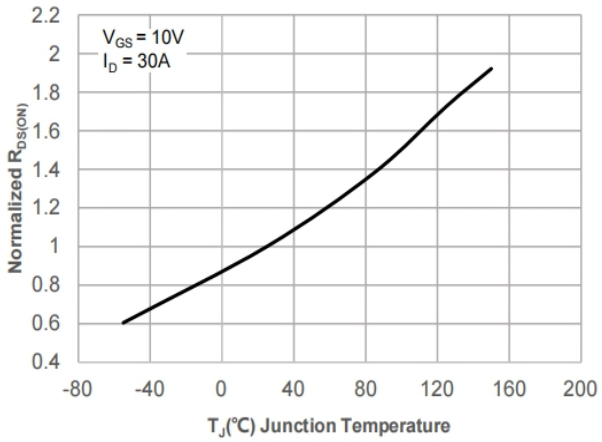


Figure 9: Maximum Safe Operating Area

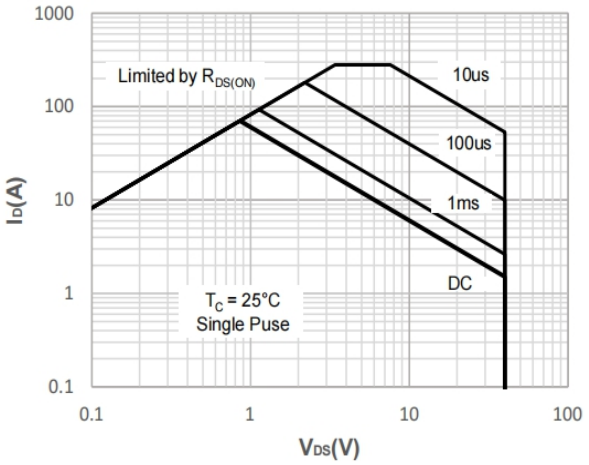


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

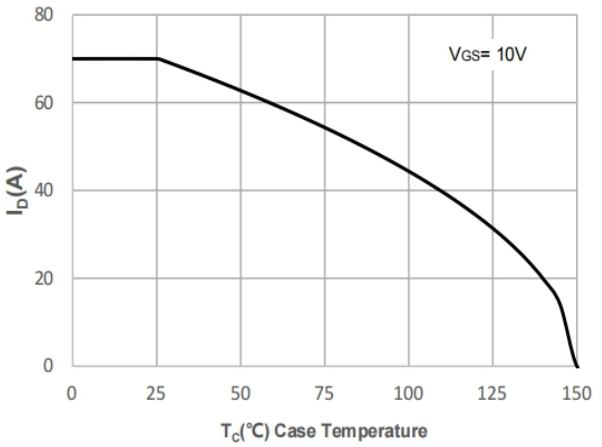


Figure 11: Normalized Maximum Transient Thermal Impedance

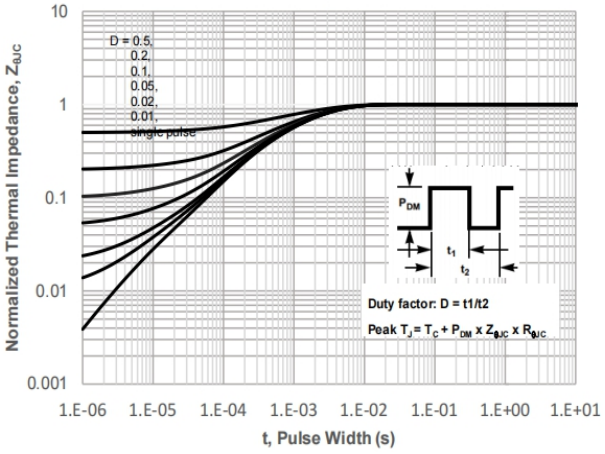
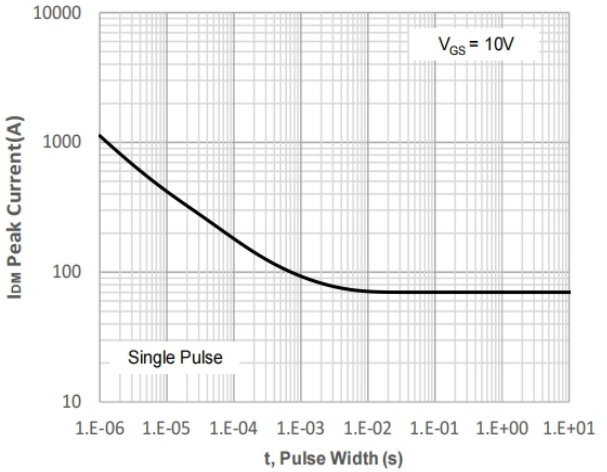
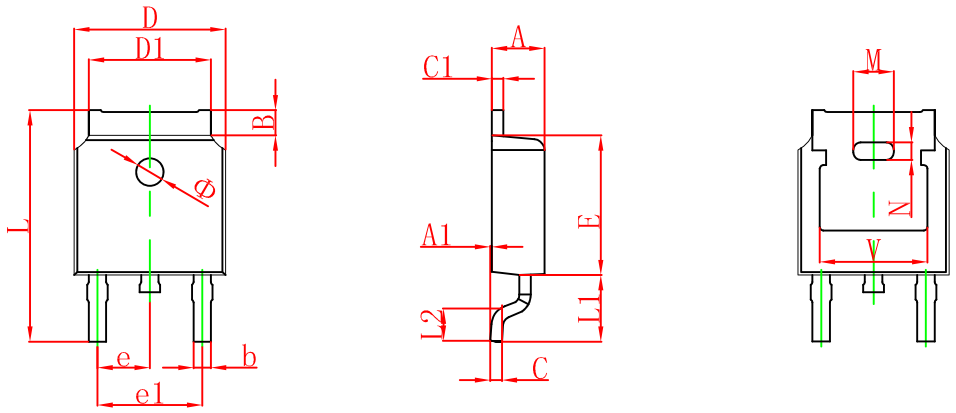


Figure 12: Peak Current Capacity

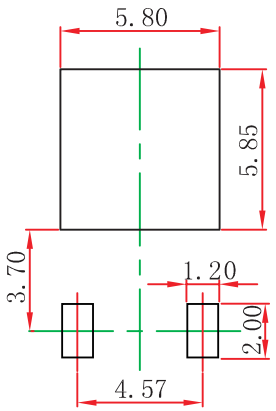


TO-252(4R)-2L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
c	0.460	0.560	0.018	0.022
c1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286 TYP.		0.090 TYP.	
e1	4.327	4.727	0.170	0.186
M	1.778REF.		0.070REF.	
N	0.762REF.		0.018REF.	
L	9.800	10.400	0.386	0.409
L1	2.9REF.		0.114REF.	
L2	1.400	1.700	0.055	0.067
V	4.830 REF.		0.190 REF.	
Φ	1.100	1.300	0.043	0.051

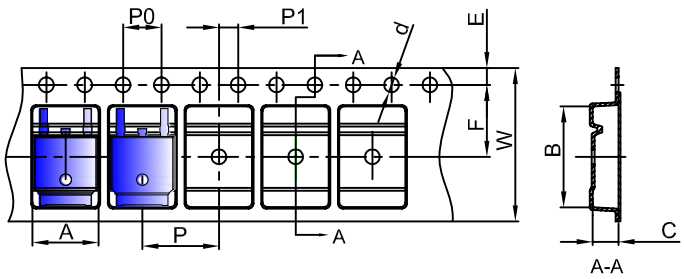
TO-252(4R)-2L Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

TO-252 Tape and reel

TO-252 Embossed Carrier Tape

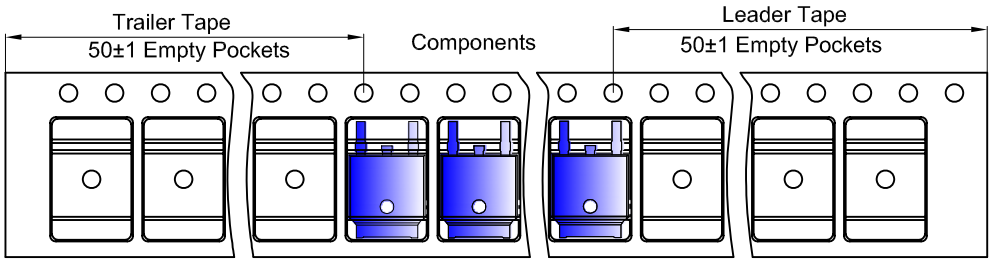


Packaging Description:

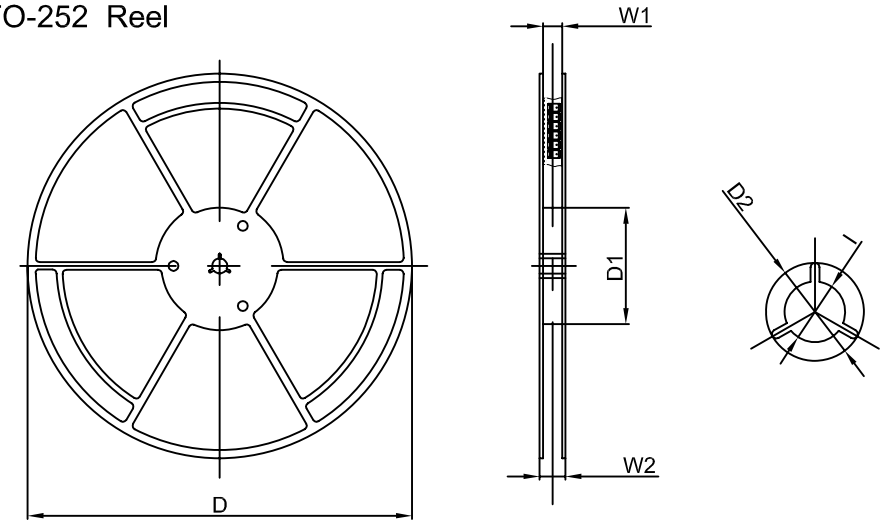
TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 25,00 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
(Tolerance)	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+0.3/-0.1

TO-252 Tape Leader and Trailer



TO-252 Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	W1	W2	I
13"Dia	330.00	100.00	Ø21.00	16.40	21.00	Ø13.00
Tolerance	+/-2	+/-1	+/-1	+/-1	+/-1	+/-1

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13inch	2,500 pcs	340×336×29	25,000 pcs	353×346×365	14.04