



# PJQ4530P-AU

## 30V N-Channel Enhancement Mode MOSFET

**Voltage**

**30 V**

**Current**

**49 A**

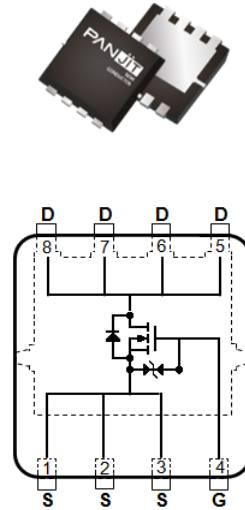
### Features

- $R_{DS(ON)}$ ,  $V_{GS}@10V$ ,  $I_D@10A < 7.8m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@4.5V$ ,  $I_D@6A < 13m\Omega$
- Excellent FOM
- Logic Level Drive
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : DFN3333-8L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.03 grams

DFN3333-8L



### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ C$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	30	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>(Note 3)</sup>	$T_C=25^\circ C$	$I_D$	49	A
	$T_C=100^\circ C$		35	
Pulsed Drain Current <sup>(Note 1)</sup>	$T_C=25^\circ C$	$I_{DM}$	196	
Power Dissipation	$T_C=25^\circ C$	$P_D$	30	W
	$T_C=100^\circ C$		15	
Continuous Drain Current <sup>(Note 4)</sup>	$T_A=25^\circ C$	$I_D$	14.2	A
	$T_A=70^\circ C$		11.8	
Power Dissipation	$T_A=25^\circ C$	$P_D$	2.5	W
	$T_A=70^\circ C$		1.8	
Single Pulse Avalanche Energy <sup>(Note 5)</sup>		$E_{AS}$	35	mJ
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~175	$^\circ C$
Thermal Resistance <sup>(Note 4)</sup>	Junction to Case	$R_{\theta JC}$	5	$^\circ C/W$
	Junction to Ambient	$R_{\theta JA}$	60	



# PJQ4530P-AU

## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.2	1.7	2.5	
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =10A	-	6.5	7.8	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A	-	10	13	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	-	-	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±10	uA
<b>Dynamic</b> (Note 6)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =24V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V(Note 2,3)	-	12.4	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	3.4	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	-	600	-	pF
Output Capacitance	C <sub>oss</sub>		-	254	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	71	-	
Gate resistance	R <sub>g</sub>	f=1MHz	-	1.1	-	Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =24V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω (Note 2,3)	-	9	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	10	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	20	-	
Turn-Off Fall Time	t <sub>f</sub>		-	16	-	
<b>Drain-Source Diode</b>						
Diode Forward Current	I <sub>S</sub>	T <sub>C</sub> =25°C	-	-	49	A
Pulsed Diode Forward Current	I <sub>SM</sub>		-	-	196	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V	-	0.8	1.1	V
Reverse Recovery Time	T <sub>rr</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =20A	-	25	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>	dI <sub>S</sub> /dt=100A/us(Note 2,3)	-	11	-	nC

NOTES :

1. Pulse width≤100us, Duty cycle≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. Chip capability with an R<sub>θJC</sub>=5°C/W.
4. R<sub>θJA</sub> is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch<sup>2</sup> with 2oz.square pad of copper.
5. The test condition is L=0.5mH, I<sub>AS</sub>=12A, V<sub>DD</sub>=30V, V<sub>GS</sub>=10V, Starting T<sub>J</sub>=25°C.
6. Guaranteed by design, not subject to production testing.



# PJQ4530P-AU

## TYPICAL CHARACTERISTIC CURVES

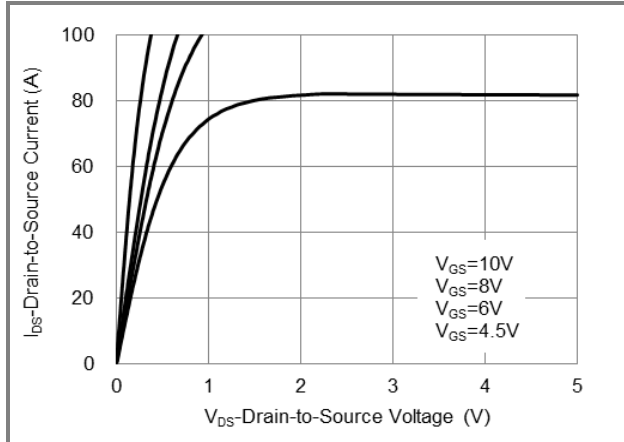


Fig.1 On-Region Characteristics

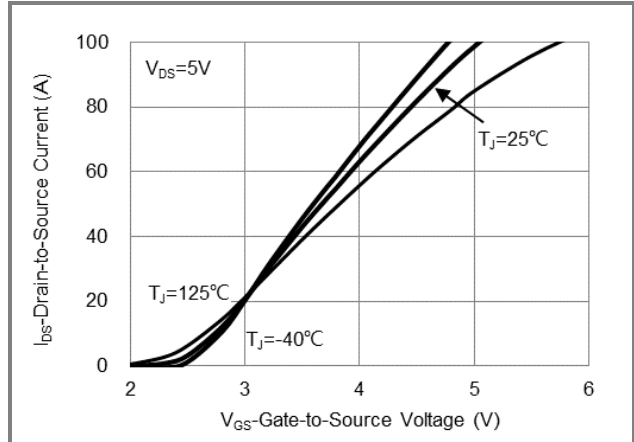


Fig.2 Transfer Characteristics

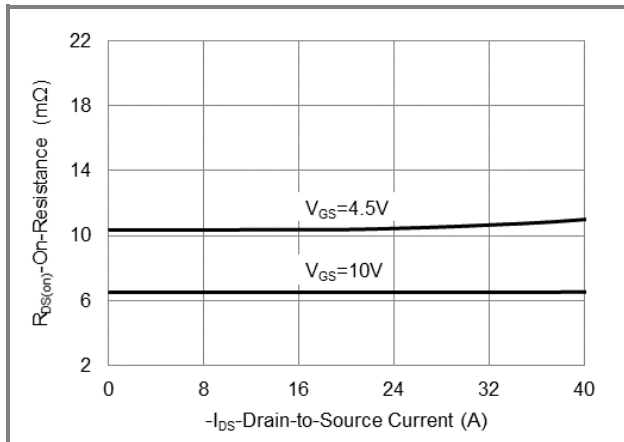


Fig.3 On-Resistance vs. Drain Current

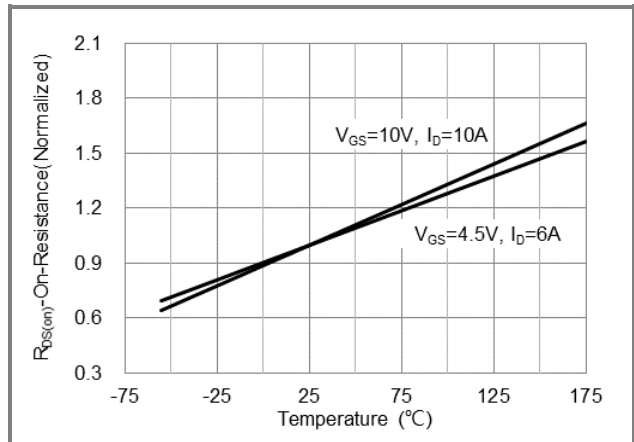


Fig.4 On-Resistance vs. Junction temperature

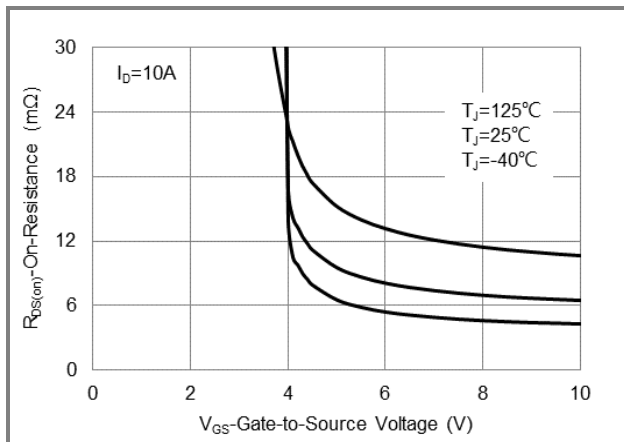


Fig.5 On-Resistance Variation with  $V_{GS}$

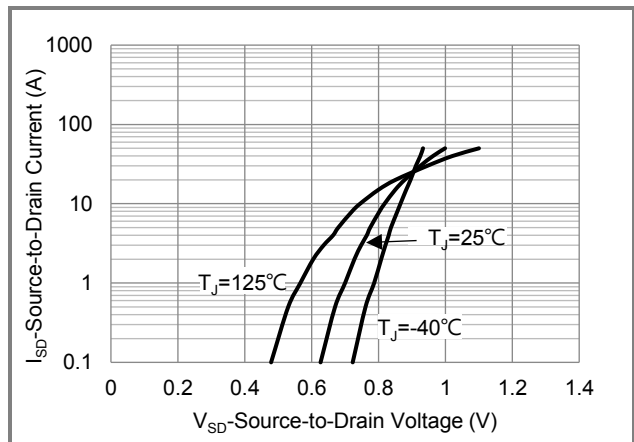


Fig.6 Source-Drain Diode Forward Voltage



# PJQ4530P-AU

## TYPICAL CHARACTERISTIC CURVES

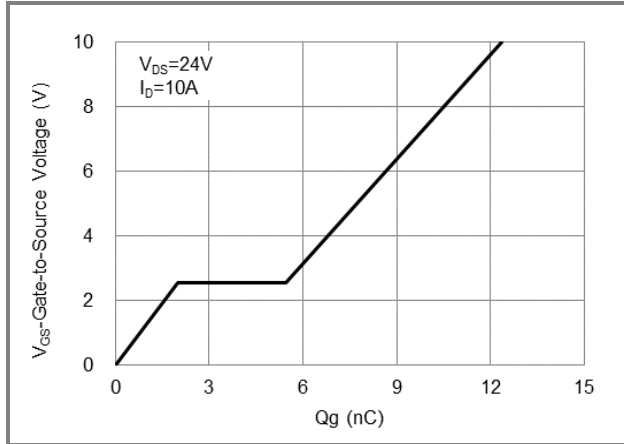


Fig.7 Gate-Charge Characteristics

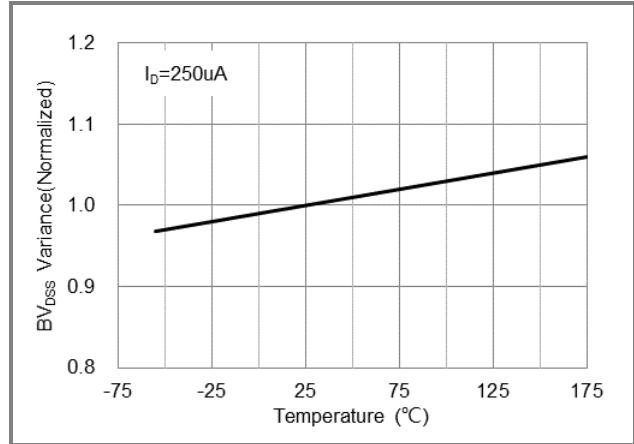


Fig.8 Breakdown Voltage Variation vs. Temperature

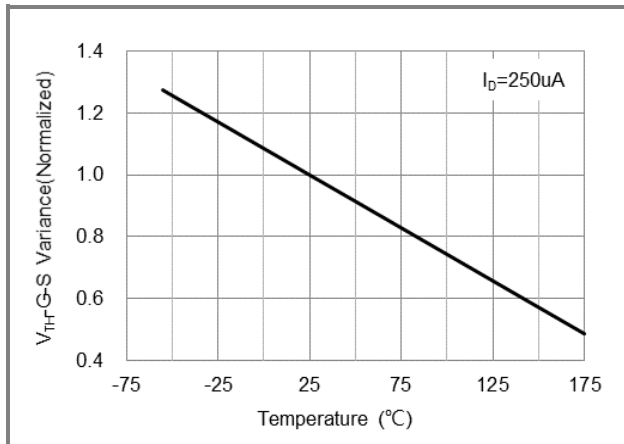


Fig.9 Threshold Voltage Variation with Temperature

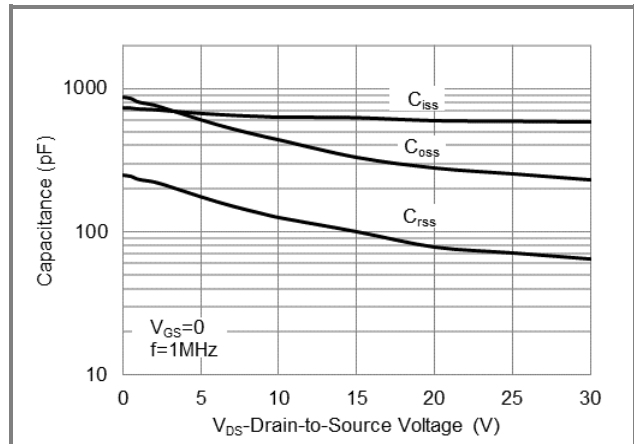


Fig.10 Capacitance vs. Drain-Source Voltage

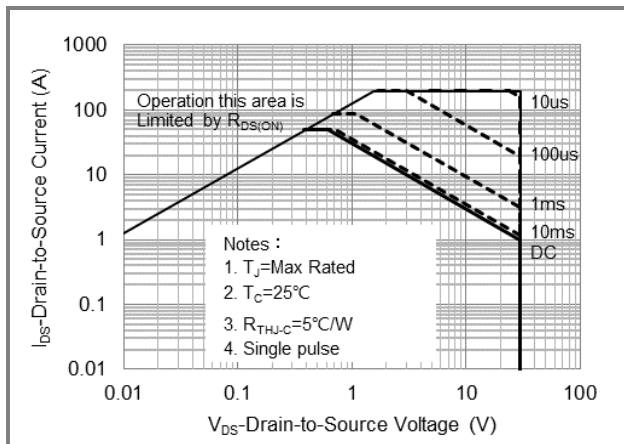


Fig.11 Maximum Safe Operating Area

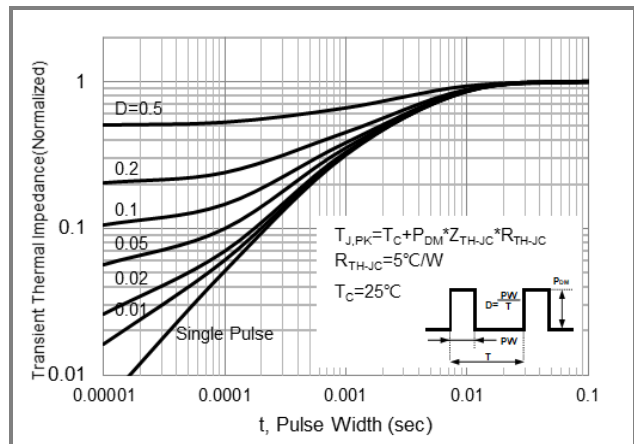


Fig.12 Normalized Transient Thermal Impedance

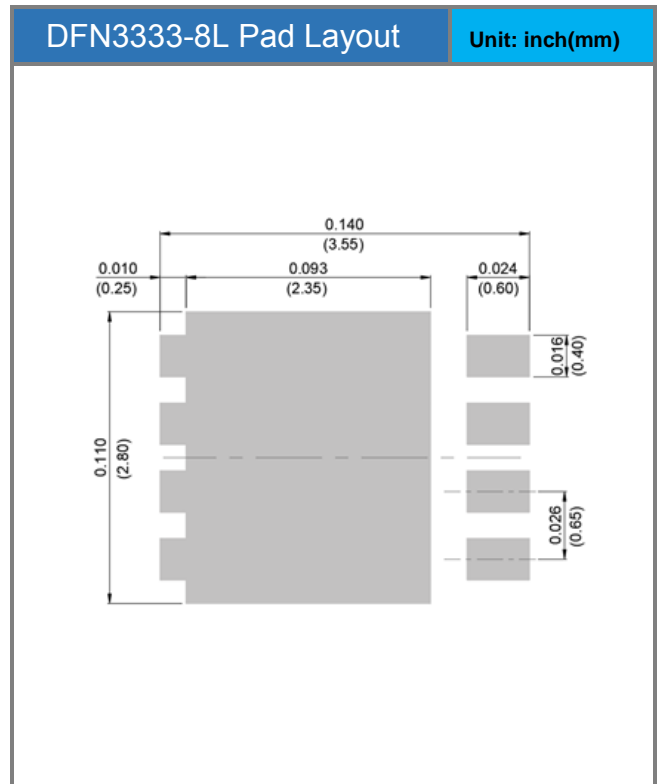
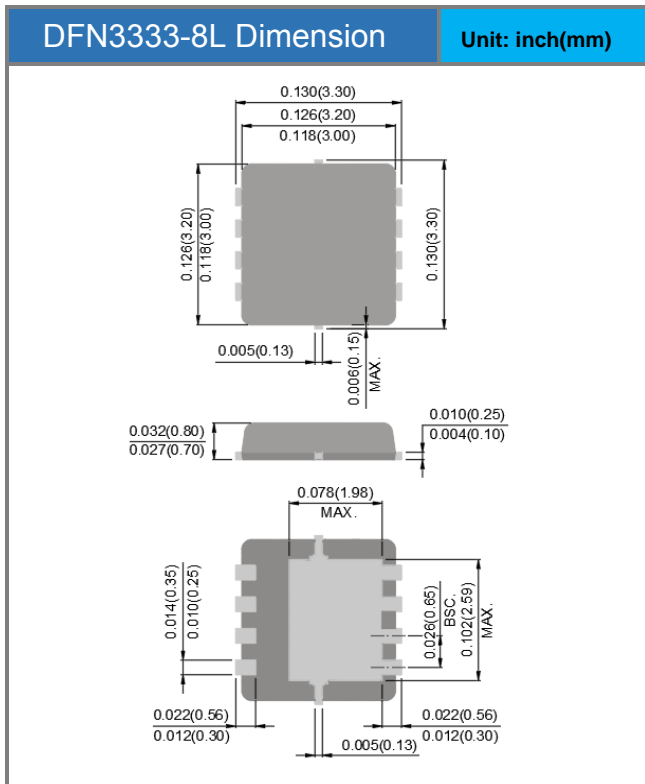


# PJQ4530P-AU

## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJQ4530P-AU	DFN3333-8L	5K pcs / 13" reel	4530

## Packaging Information & Mounting Pad Layout





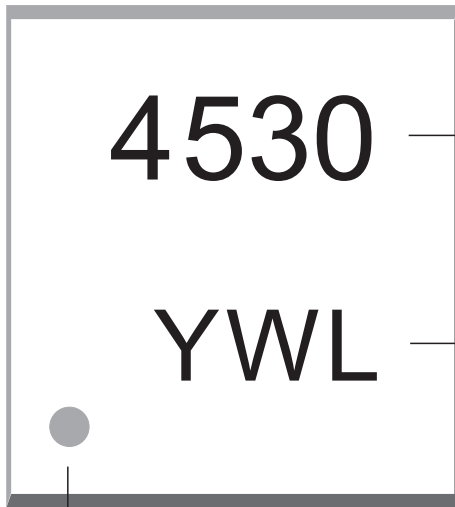
## PJQ4530P-AU

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- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.



## 2.MARKING



1st Line : Marking code

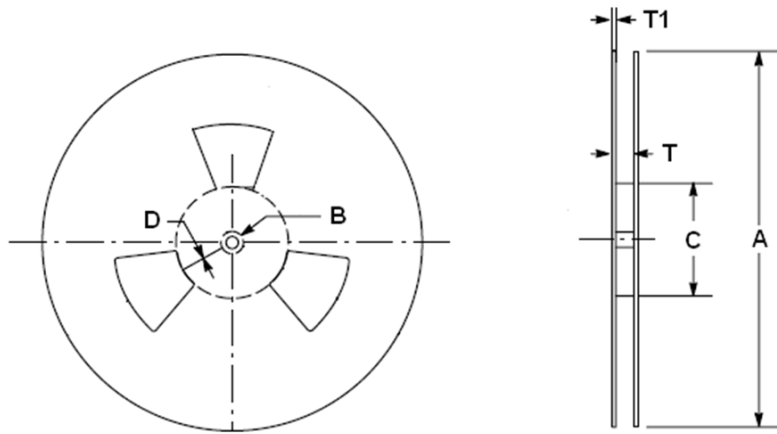
2nd line:

- Y - Last digit of calendar year
- W - Weekly
- L - Lot

Pin 1



### 3. TAPING

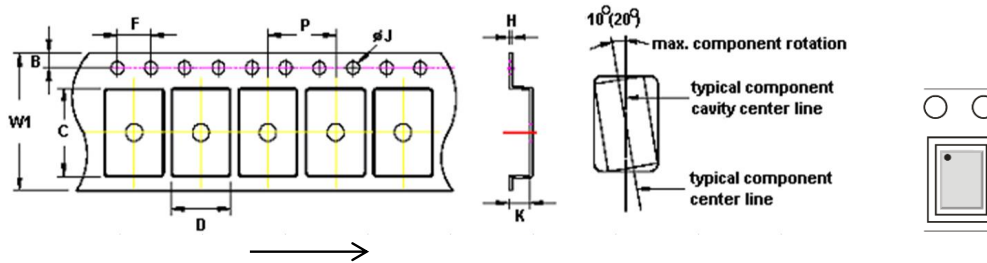


Notes :

1. Material : High Impact PS
2. Measured at Hub

A	B	C	D	T	T1
330.0±1.0	20.0±0.5	178.0±1.0	2.0±0.5	13.6±1.0	3.0±0.5

Units : mm



B	C	D	F	H	J	K	P	W1
1.75±0.1	3.55±0.1	3.55±0.1	4±0.1	0.3±0.05	1.55±0.05	1.1±0.1	8±0.1	12±0.3

Units : mm

NOTE : All other requirements not specified herein shall be in accordance to EIA-481 standard under latest revision.

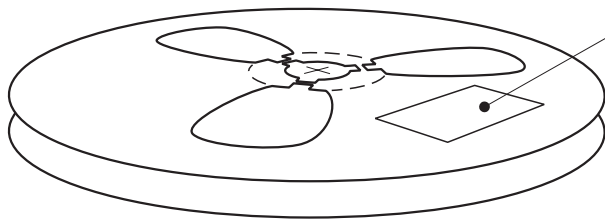
Package	Leader	Trailer
DFN3333-8L	>400mm (Included 100mm empty type with sealed)	>160mm





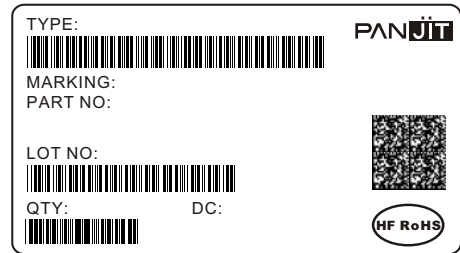
# 4. PACKING

## REEL PACKING

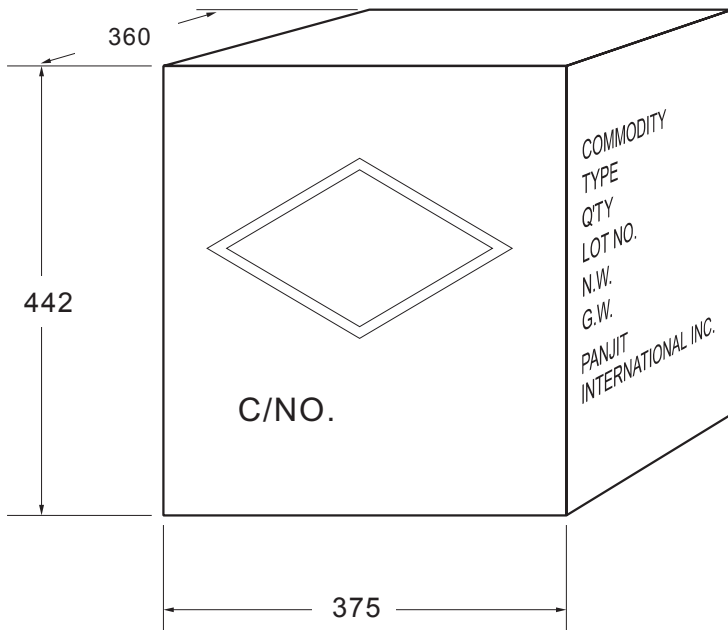


Quantity per Reel: 5,000 pcs

### LABEL TYPE

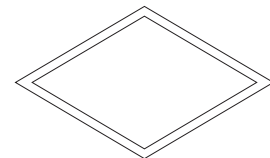


## CARTON



Box Dimensions : mm  
Quantity per Box: 80,000 pcs

### SHIPPING MARK



C/NO.  
PRODUCT COUNTRY

### SIDE MARK

COMMODITY:  
TYPE:  
Q'TY:  
LOT NO.  
N.W.  
G.W.  
PANJIT  
INTERNATIONAL INC.



**Packing Specifications**

Package	Reel Size	Reel	Carton	Carton Size	Approx. Gross Weight
	(inch)	(pcs)	(EA)	(mm)	(kg)
Reel Packing					
DFN0603	7	10,000	800,000	390 x 270 x 400	9.0
DFN0603-2L	7	10,000	800,000	390 x 270 x 400	9.0
DFN 2L	7	8,000	640,000	390 x 270 x 400	8.6
DFN 3L	7	8,000	640,000	390 x 270 x 400	8.6
DFN1006-2L	7	10,000	800,000	390 x 270 x 400	5.0
DFN1006-3L	7	10,000	800,000	390 x 270 x 400	5.0
DFN1010-6L(ESD)	7	5,000	400,000	455 x 270 x 440	8.84
DFN1010B-6L(ESD)	7	5,000	400,000	455 x 270 x 440	8.84
DFN1608-2L	7	3,000	240,000	390 x 270 x 400	9.7
DFN1610-2L	7	3,000	240,000	390 x 270 x 400	9.7
DFN2020-6L(ESD)	7	3,000	240,000	455 x 270 x 440	12.3
DFN2020B-6L(ESD)	7	3,000	240,000	455 x 270 x 440	12.3
DFN2020-8L(ESD)	7	3,000	240,000	455 x 270 x 440	11.2
DFN2510-10L	7	5,000	400,000	390 x 270 x 400	10.5
	13	12,000	144,000	375 x 360 x 213	6.4
DFN2510A-10L(ESD)	7	3,000	240,000	455 x 270 x 440	10.95
DFN3030B-8L(ESD)	7	3,000	240,000	455 x 270 x 440	10.5
DFN3333-8L	13	5,000	80,000	375 x 360 x 422	10.5
DFN3333B-8L	13	5,000	80,000	375 x 360 x 422	10.5
DFN3810-9L(ESD)	7	3,000	120,000	390 x 240 x 420	4.4
DFN5060-8L(ESD)	13	3,000	48,000	375 x 360 x 422	14.19
DFN5060B-8L(ESD)	13	3,000	48,000	375 x 360 x 422	14.19
DFN5060X-8L(ESD)	13	3,000	48,000	375 x 360 x 422	14.19
DFN5515-14L	7	3,000	240,000	390 x 270 x 400	12.9
SOP-8	13	2,500	40,000	375 x 360 x 422	7.4
SOD-923	7	8,000	640,000	390 x 270 x 400	7.7
SOD-523	7	5,000	400,000	390 x 270 x 400	9.1
	13	12,000	144,000	375 x 360 x 230	5.4
SOD-323HE	7	5,000	400,000	390 x 270 x 400	11.9
	13	12,000	144,000	375 x 360 x 230	8.3
SOD-323	7	5,000	400,000	390 x 270 x 400	9.4
	13	12,000	144,000	375 x 360 x 230	5.9
SOD-323S	7	3,000	240,000	410 x 290 x 410	
SOD-123HE	7	3,000	240,000	390 x 270 x 400	12.4
	13	10,000	120,000	375 x 360 x 230	8.1
SOD-123FL	7	3,000	240,000	390 x 270 x 400	10.6
	13	10,000	120,000	375 x 360 x 230	7.2
SOD-123	7	3,000	240,000	390 x 270 x 400	9.9
	13	10,000	120,000	375 x 360 x 230	6.5
SOT-143	7	3,000	240,000	390 x 270 x 400	9.0
SOT-723(ESD)	7	8,000	640,000	455 x 270 x 440	10.5
SOT-563	7	4,000	320,000	390 x 270 x 400	10
	13	10,000	120,000	375 x 360 x 230	5.2
SOT-563(ESD)	7	4,000	320,000	455 x 270 x 440	10.8
SOT-553	7	4,000	320,000	390 x 270 x 400	9.4
	13	10,000	120,000	375 x 360 x 230	5.2



**Packing Specifications**

Package	Reel Size	Reel	Carton	Carton Size	Approx. Gross Weight
	(inch)	(pcs)	(EA)	(mm)	(kg)
Reel Packing					
SOT-523	7	4,000	320,000	390 x 270 x 400	10
SOT-523(ESD)	7	4,000	320,000	455 x 270 x 440	10.8
SOT-363	7	3,000	240,000	390 x 270 x 400	9.3
	13	10,000	120,000	375 x 360 x 230	7.1
SOT-363(ESD)	7	3,000	240,000	455 x 270 x 440	10.1
SOT-353	7	3,000	240,000	390 x 270 x 400	10
	13	10,000	120,000	375 x 360 x 230	7.2
SOT-323	7	3,000	240,000	390 x 270 x 400	7.9
	13	12,000	144,000	375 x 360 x 230	6.1
SOT-323(ESD)	7	3,000	240,000	455 x 270 x 440	8.7
SOT-23 6L	7	3,000	240,000	390 x 270 x 400	14.5
	13	10,000	120,000	375 x 360 x 230	7.9
SOT-23 6L(ESD)	7	3,000	240,000	455 x 270 x 440	15.3
SOT-23 6L-1	7	3,000	240,000	390 x 270 x 400	14.9
	13	10,000	120,000	375 x 360 x 230	8.1
SOT-23 6L-1(ESD)	7	3,000	240,000	455 x 270 x 440	15.7
SOT-23 5L	7	3,000	240,000	390 x 270 x 400	14.5
	13	10,000	120,000	375 x 360 x 230	7.9
SOT-23	7	3,000	240,000	390 x 270 x 400	9.8
	13	12,000	144,000	375 x 360 x 230	7
SOT-23(ESD)	7	3,000	240,000	455 x 270 x 440	10.6
SOT-223	13	2,500	40,000	375 x 360 x 422	14.96
SOT-89(ESD)	7	1,000	80,000	455 x 270 x 440	15.64
SMAF	7	3,000	120,000	390 x 240 x 420	10.9
	13	10,000	160,000	375 x 360 x 422	14.1
SMAF-C	7	3,000	120,000	390 x 240 x 420	10.9
	13	10,000	160,000	375 x 360 x 422	14.1
SMBF	7	1,500	60,000	390 x 240 x 420	9.6
	13	5,000	80,000	375 x 360 x 422	15.6
SMA(W)	7	1,800	100,800	390 x 240 x 420	13
	13	7,500	150,000	355 x 355 x 400	20.45
SMAS	7	2,300	128,800	390x 240x 420	11.5
	13	9,500	190,000	355x 355 x 400	16.1
SMA/DO-214AC	7	1,800	72,000	390 x 220 x 370	9.98
	13	7,500	120,000	375 x 360 x 390	17.35
SMB/DO-214AA	7	800	32,000	390 x 220 x 370	7.69
	13	3,000	48,000	375 x 360 x 390	13.23
SMC/DO-214AB	7	800	24,000	390 x 220 x 370	10.79
	13	3,000	42,000	375 x 360 x 390	17.98
SC-59 (ESD)	7	3,000	240,000	455 x 270 x 440	9.9
DO-41	13	5,000	25,000	340 x 340 x 410	11.04
DO-15	13	4,000	20,000	340 x 340 x 410	11.39
DO-201AD / DO-201AE	13	1,250	6,250	340 x 340 x 410	9.2
DO-218AC / DO-218AB	13	600	24,000	375 x 360 x 230	10.25
P-600	13	800	4,000	340 x 340 x 410	9.85



**Packing Specifications**

Package	Reel Size	Reel	Carton	Carton Size	Approx. Gross Weight
	(inch)	(pcs)	(EA)	(mm)	(kg)
Reel Packing					
DO-34	15	10,000	50,000	365 x 370 x 410	10.1
DO-35	15	10,000	50,000	365 x 370 x 410	11.2
DO-41G	15	5,000	25,000	365 x 370 x 410	10.9
MICRO-MELF	7	3,000	240,000	390 x 270 x 400	8.8
	13	10,000	200,000	355 x 355 x 400	11.5
QUADRO-MELF	7	2,500	200,000	390 x 270 x 400	13.3
	13	10,000	200,000	355 x 355 x 400	14.9
MINI-MELF/LL-34	7	2,500	200,000	390 x 270 x 400	12.7
	13	10,000	200,000	355 x 355 x 400	14.6
MELF/DL-41	7	1,500	84,000	390 x 270 x 400	18.3
	13	5,000	100,000	355 x 355 x 400	23.5
MDI	13	3,000	48,000	375 x 360 x 390	14.71
MICRO DIP/TDI	7	1,000	40,000	390 x 240 x 420	9.5
	13	4,000	64,000	375 x 360 x 422	17
MBF	13	5,000	80,000	375 x 360 x 390	15.9
SDIP	13	1,500	21,000	375 x 360 x 390	14.31
TO-277	7	1,500	60,000	390 x 240 x 420	12.2
	13	5,000	80,000	375 x 360 x 422	19.1
TO-277A	13	5,000	80,000	375 x 360 x 422	18.52
TO-277B	13	5,000	80,000	375 x 360 x 422	20.6
TO-252	13	3,000	42,000	375 x 360 x 390	18.8
TO-252AA	13	3,000	48,000	375 x 360 x 422	24.16
TO-252AA	13	3,000	42,000	375 x 360 x 390	20.78
TO-263/D <sup>2</sup> PAK	13	800	6,400	375 x 360 x 390	14.45
ABS	13	4,000	6,400	375 x 360 x 422	17.8
M4	13	3,000	42,000	375 x 360 x 390	14
M8	13	2,000	16,000	375 x 360 x 390	16.86



**Packing Specifications**

Package	Box	Inner Box Size	Carton	Carton Size	Approx. Gross Weight
	(EA)	(mm)	(EA)	(mm)	(kg)
Bulk Packing					
DO-41	1,000	198 x 84 x 20	50,000	459 x 214 x 256	19.3
DO-15	1,000	200 x 85 x 25	40,000	459 x 214 x 256	20.7
DO-201AD / DO-201AE	500	200 x 85 x 40	12,500	459 x 214 x 256	15.95
P-600	100	208 x 82 x 40	2,500	459 x 214 x 256	6.83
DO-34	2,000	240 x 90 x 100	120,000	410 x 268 x 345	14.5
DO-35	2,000	240 x 90 x 100	120,000	410 x 268 x 345	17.1
DO-41G	1,000	240 x 90 x 100	60,000	410 x 268 x 345	18.5
TO-220AC	2,000	540 x 145 x 85	8,000	555 x 306 x 200	21.76
ITO-220AC	2,000	540 x 145 x 85	8,000	555 x 306 x 200	19.34
TO-220AB	2,000	540 x 145 x 85	8,000	555 x 306 x 200	22
TO-220AB-L	2,000	540 x 145 x 85	8,000	555 x 306 x 200	24.63
ITO-220AB	2,000	540 x 145 x 85	8,000	555 x 306 x 200	19.58
ITO-220AB-F	2,000	540 x 145 x 85	8,000	555 x 306 x 188	25.5
TO-251AA	8,000	555 x 145 x 87	32,000	570 x 306 x 203	23.87
TO-251AB	8,000	555 x 145 x 95	32,000	572 x 306 x 218	18.64
TO-263/D <sup>2</sup> PAK	2,000	540 x 145 x 85	8,000	555 x 306 x 200	18.7
GBU	250	220 x 120 x 43	5,000	510 x 235 x 245	21.5
GBU-2	1,000	485 x 185 x 120	2,000	500 x 200 x 270	12.54
GBL	300	240 x 120 x 35	6,000	510 x 260 x 200	15
GBL-2	2,000	550 x 200 x 122	4,000	565 x 215 x 265	13.15
GBJ	200	200 x 145 x 42	3,000	455 x 220 x 240	14.5
GBJ-2	900	485 x 185 x 120	1,800	500 x 200 x 270	18.2
KBP	500	225 x 160 x 35	7,500	500 x 236 x 196	12.58
KBPF	500	225 x 160 x 35	7,500	500 x 250 x 195	13.3
KBL	200	257 x 125 x 50	3,000	415 x 275 x 300	17.5
KBU	200	274 x 150 x 60	3,000	470 x 290 x 330	23.7
KBJ	200	306 x 108 x 42	2,000	322 x 246 x 252	15
KBJ-2	1,000	550 x 200 x 122	2,000	565 x 215 x 265	13.13
KBJ-P	250	305 x 130 x 45	2,000	327 x 290 x 210	15.05
D3K	500	210 x 155 x 30	7,500	480 x 225 x 170	11.6
DXK	2,800	550 x 200 x 122	5,600	565 x 215 x 265	13.8
TO-3P/TO-247AD	-	-	1,500	530 x 243 x 100	13.9
TO-247AD 2L / TO-3PL	-	-	1,500	530 x 255 x 110	12.2
TO-247AD-2LD	-	-	1,500	530 x 243 x 100	14.35

**Packing Specifications**

Package	Box	Inner Box Size	Carton	Carton Size	Approx. Gross Weight
	(EA)	(mm)	(EA)	(mm)	(kg)
Tube Packing					
GBJ-1	750	490 x 201 x 104	1,500	505 x 225 x 235	16



**Packing Specifications**

Package	Tape Space	Ammo	Inner Box Size	Carton	Carton Size	Appox. Gross Weight
	(mm)					
Ammunition Packing						
DO-41	52	5,000	255 x 75 x 150	40,000	339 x 276 x 330	15.9
	52	3,000	255 x 73 x 95	24,000	333 x 281 x 218	8.9
DO-15	52	3,000	255 x 75 x 150	24,000	339 x 276 x 330	13.25
	52	1,500	255 x 73 x 95	18,000	339 x 276 x 330	8.64
DO-201AD / DO-201AE	52	1,250	255 x 75 x 150	10,000	339 x 276 x 330	13.36
	52	750	255 x 75 x 95	9,000	339 x 276 x 330	11.62
P-600	52	400	255 x 75 x 150	3,200	339 x 276 x 330	8.1
DO-34	52	5,000	248 x 80 x 75	100,000	410 x 268 x 345	13.1
	26	5,000	248 x 80 x 48	150,000	410 x 268 x 345	15.3
DO-35	52	5,000	248 x 80 x 75	100,000	410 x 268 x 345	15.7
	26	5,000	248 x 80 x 48	150,000	410 x 268 x 345	17.5
DO-41G	52	2,500	248 x 80 x 75	50,000	410 x 268 x 345	16.4
	26	2,500	248 x 80 x 48	75,000	410 x 268 x 345	17.8

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