

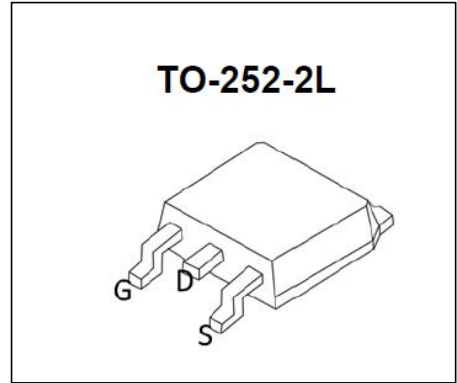


CHONGQING CLOUDCHILD TECHNOLOGY CO.,LTD
TO-252-2L Plastic-Encapsulate MOSFETS

CC30N06D

N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30 V	3.7mΩ@10V	90A



DESCRIPTION

The CC30N06D uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications .

FEATURES

- Trench Technology Power MOSFET
- Low Gate Charge
- Low RDS(on)
- Low Gate Resistance
- 100% UIS Tested

APPLICATIONS

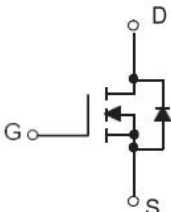
- Power Switching Application

MARKING



U30N06= Device Code
XX = Date Code
Solid Dot = Green Indicator

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS($T_c=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	90	A
	$T_C = 25^{\circ}\text{C}$		
Pulsed Drain Current ²	I_{DM}	360	A
Single Pulsed Avalanche Current ³	I_{AS}	28	A
Single Pulsed Avalanche Energy ³	E_{AS}	196	mJ
Power Dissipation ⁵	P_D	100	W
	$T_C = 25^{\circ}\text{C}$		
Power Dissipation ⁶	P_D	2.5	W
	$T_A = 25^{\circ}\text{C}$		
Thermal Resistance from Junction to Ambient ⁶	$R_{\theta JA}$	50	$^{\circ}\text{C}/\text{W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.5	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

Notes :

1. The maximum current rating is limited by package. And device mounted on a large heatsink.
2. Pulse Test : Pulse Width $\leq 10\mu\text{s}$, duty cycle $\leq 1\%$.
3. EAS condition: $V_{DD} = 15\text{V}$, $V_{GS} = 10\text{V}$, $L = 0.5\text{mH}$, $R_G = 25\Omega$ Starting $T_J = 25^{\circ}\text{C}$.
4. Pulse Test : Pulse Width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
5. The power dissipation P_D is limited by $T_J(\text{MAX}) = 150^{\circ}\text{C}$. And device mounted on a large heatsink.
6. Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^{\circ}\text{C}$.

MOSFET ELECTRICAL CHARACTERISTICS

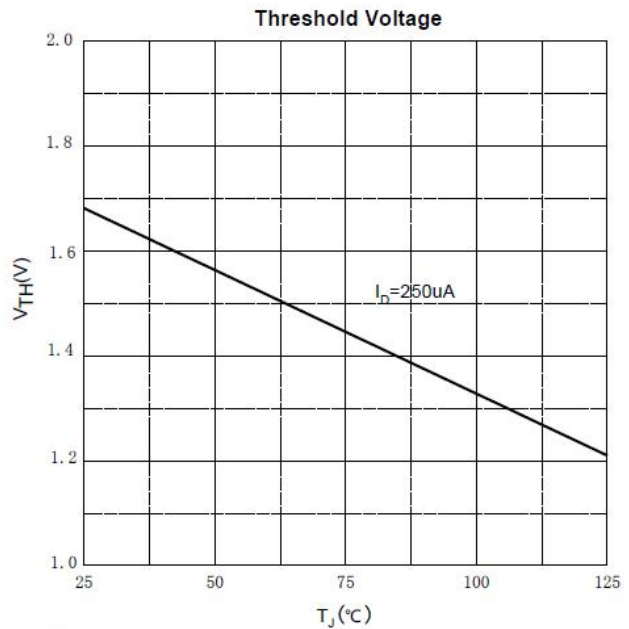
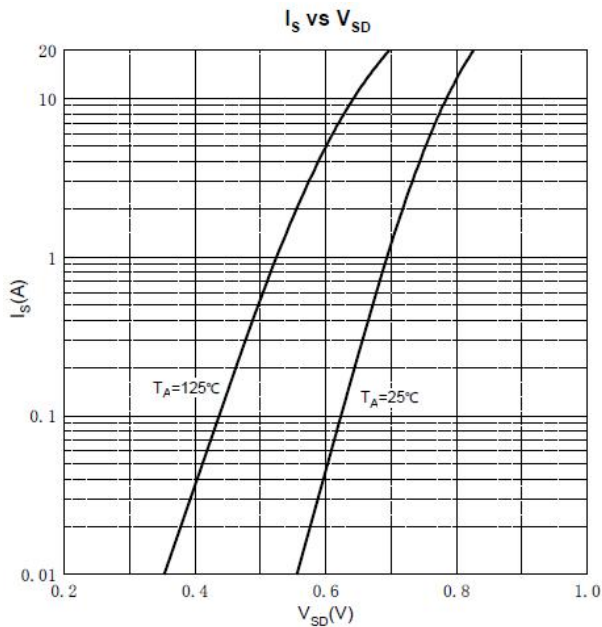
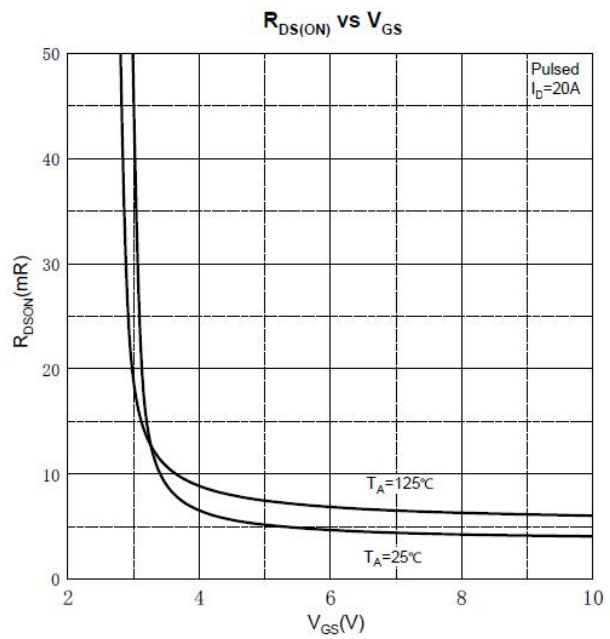
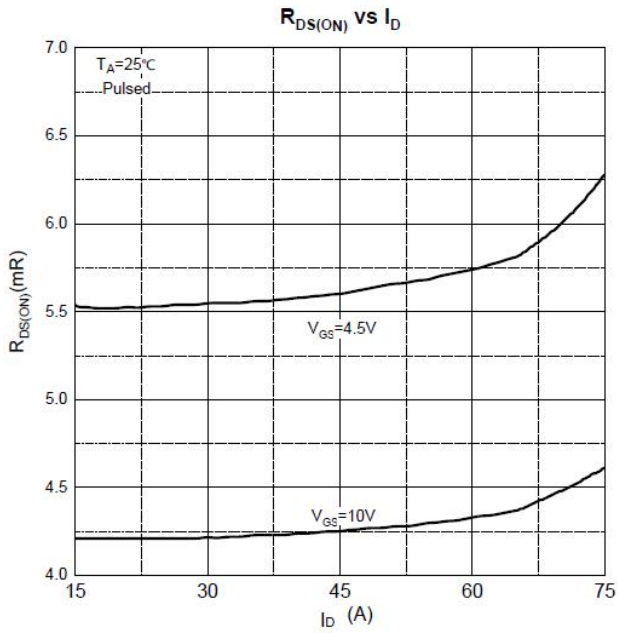
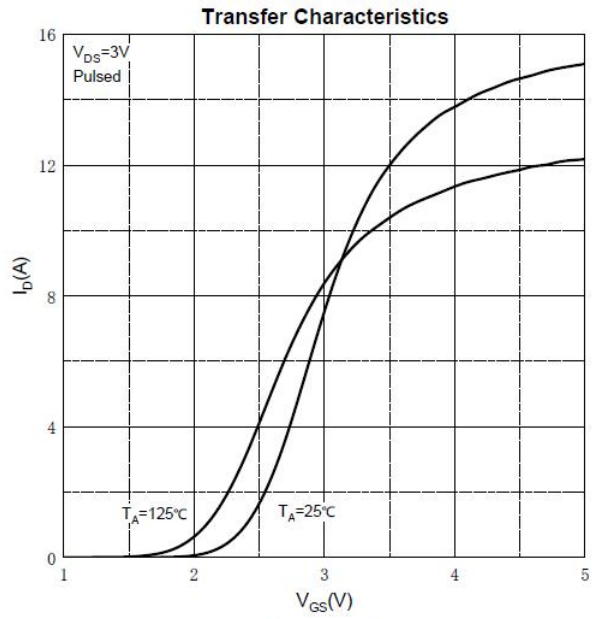
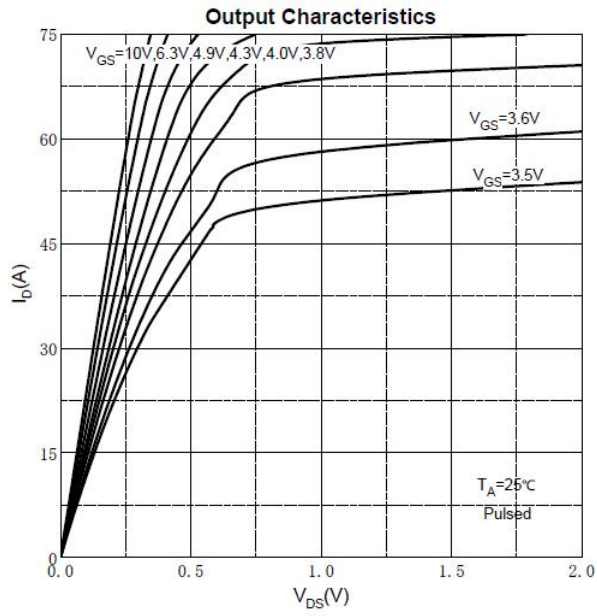
TC=25°C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics⁴						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.7	2.5	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		3.7	6	m Ω
		$V_{GS} = 4.5V, I_D = 20A$		6	9	
Forward Transconductance	g_{FS}	$V_{DS} = 5V, I_D = 20A$	20			S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, f = \text{MHz}$		2116		pF
Output Capacitance	C_{oss}			281.9		
Reverse Transfer Capacitance	C_{rss}			220.8		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1\text{MHz}$		2.8		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 15V, V_{GS} = 10V, I_D = 20A$		41.8		nC
Gate-source Charge	Q_{gs}			6.2		
Gate-drain Charge	Q_{gd}			7.8		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, V_{GS} = 10V, R_L = 0.75\Omega$ $R_G = 3\Omega$		12		ns
Turn-on Rise Time	t_r			15.5		
Turn-off Delay Time	$t_{d(off)}$			40		
Turn-off Fall Time	t_f			14		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V_{SD}	$V_{GS} = 0V, I_S = 20A$			1.2	V

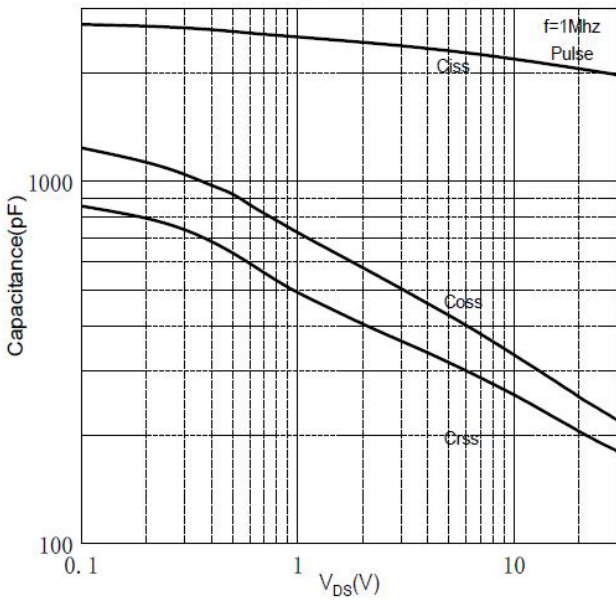
Notes :

- 1 The maximum current rating is limited by package. And device mounted on a large heatsink.
- 2 Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3 EAS condition: $V_{DD} = 15V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ C$.
- 4 Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 5 The power dissipation PD is limited by $T_J(MAX) = 150^\circ C$. And device mounted on a large heatsink.
- 6 Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$.

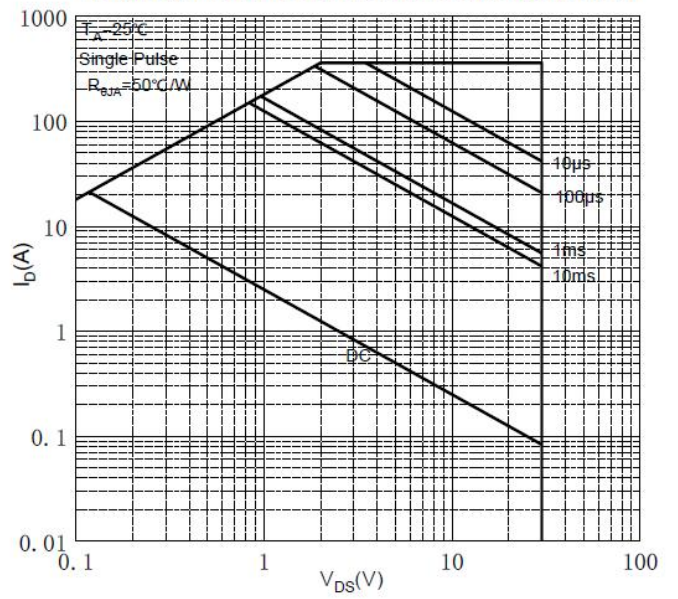
Typical Characteristics



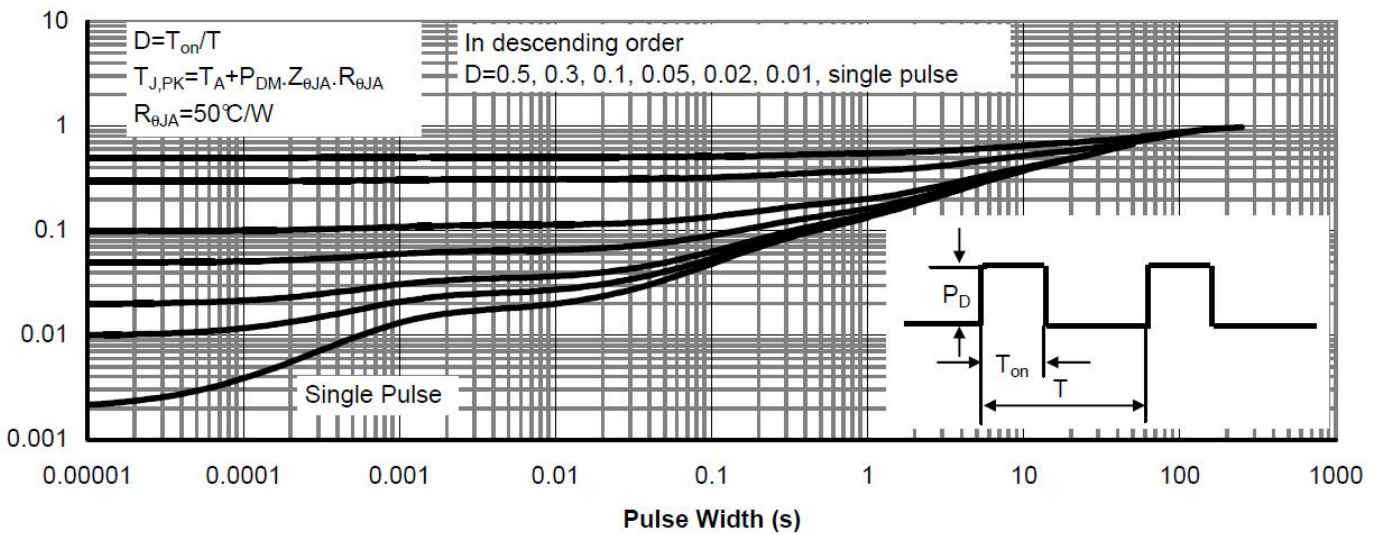
Capacitance vs V_{DS}



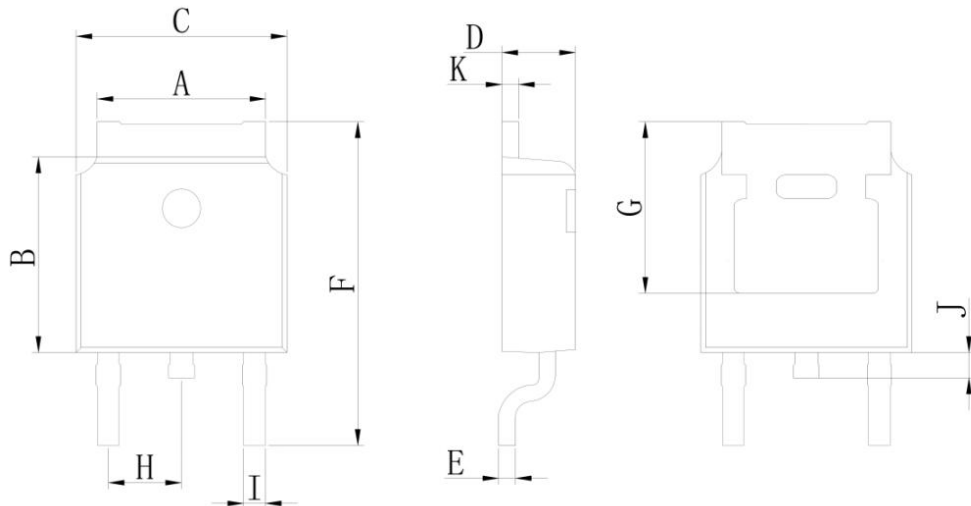
Maximum Forward Biased Safe Operating Area



Normalized Maximum Transient Thermal Impedance

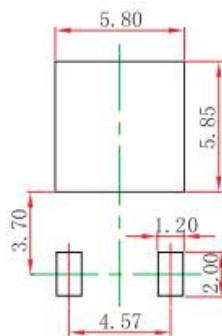


TO-252-2L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	5.050	5.650	0.199	0.222
B	5.800	6.400	0.228	0.252
C	6.250	6.850	0.246	0.270
D	2.200	2.400	0.087	0.094
E	0.400	0.600	0.016	0.024
F	9.710	10.310	0.382	0.406
G	5.050	5.650	0.199	0.222
H	2.100	2.500	0.083	0.098
I	0.700	0.900	0.028	0.035
J	0.500	0.900	0.020	0.035
K	0.400	0.600	0.016	0.024

TO-252-2L Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: 0.5mm.
3. The pad layout is for reference purposes only.

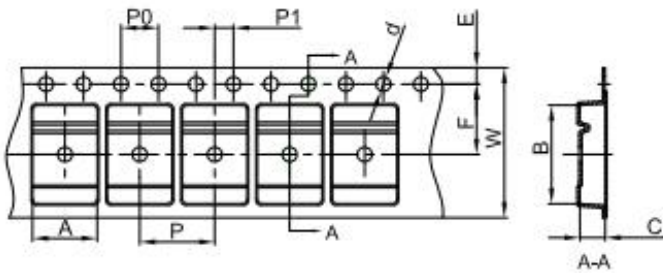
NOTICE

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TO-252-2L Tape and Reel

TO-252 Embossed Carrier Tape

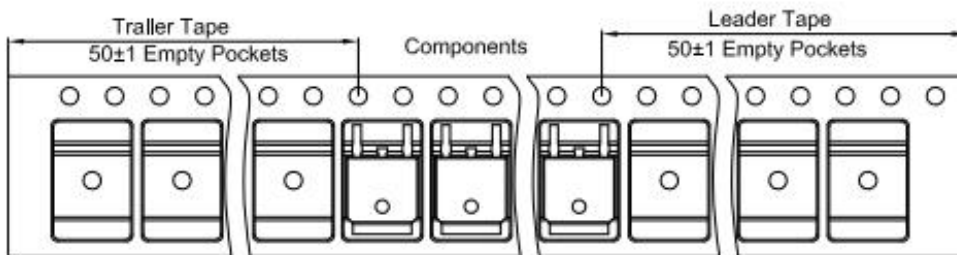


Packaging Description:

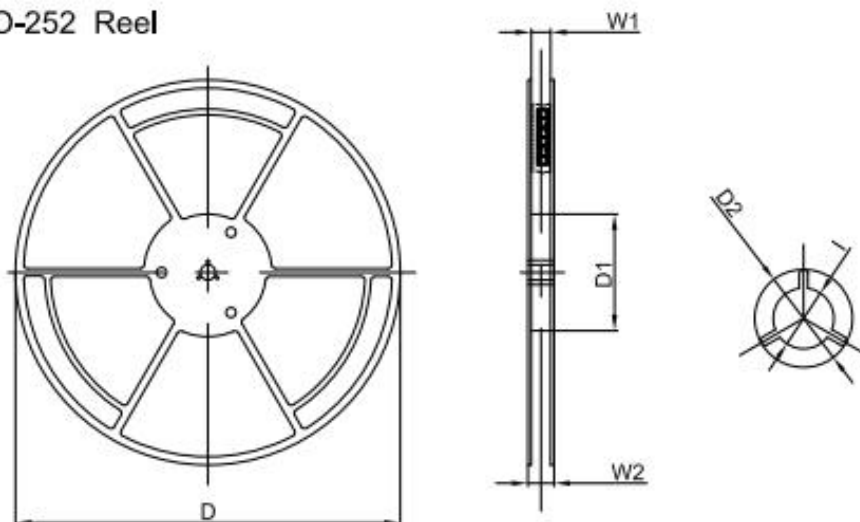
TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in 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

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

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	

Date of change	Rev #	revise content
2023/08/08	A/0	/