



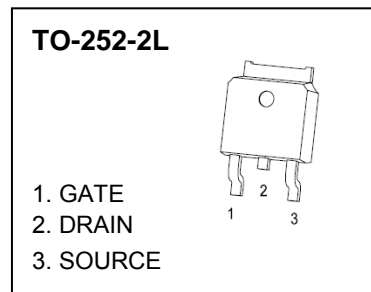
## TO-252-2L Plastic-Encapsulate MOSFETS

### CJU40P04 P-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
-40V	14mΩ@-10V	-40A

#### DESCRIPTION

The CJU40P04 uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. This device is well suited for high current load applications.



#### FEATURES

- High density cell design for ultra low  $R_{DS(ON)}$
- Fully characterized Avalanche voltage and current
- Good stability and uniformity with high  $E_{AS}$
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

#### APPLICATIONS

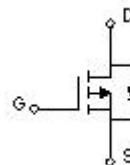
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

#### MARKING



CJU40P04= Device code  
Solid dot = Green molding compound device,  
if none, the normal device  
XXX=Date Code

#### EQUIVALENT CIRCUIT



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-40	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	-40	A
Pulsed Drain Current	$I_{DM}$	-160	A
Single Pulsed Avalanche Energy	$E_{AS}^{(1)}$	544	mJ
Power Dissipation	$P_D$	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^{\circ}\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-55 ~+150	$^{\circ}\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	$T_L$	260	$^{\circ}\text{C}$

(1). $E_{AS}$  condition:  $V_{DD}=-20\text{V}$ ,  $L=1\text{mH}$ ,  $R_G=25\Omega$ , Starting  $T_J = 25^{\circ}\text{C}$

## MOSFET ELECTRICAL CHARACTERISTICS

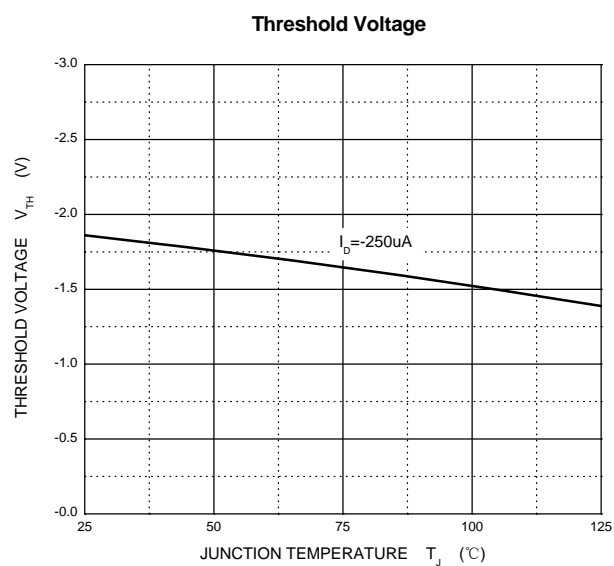
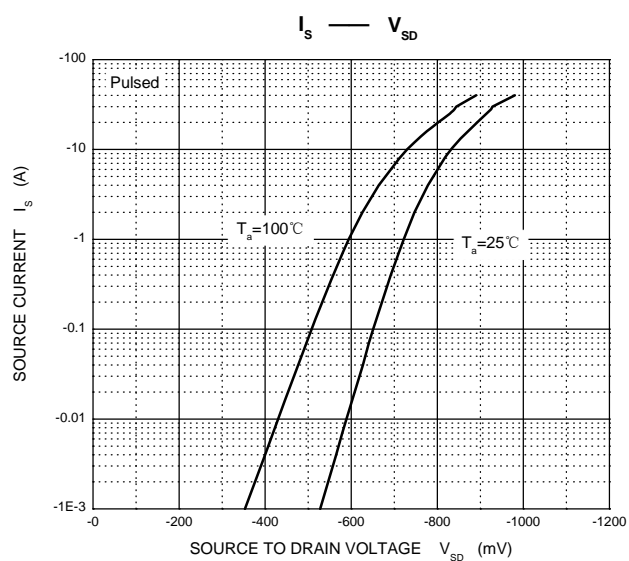
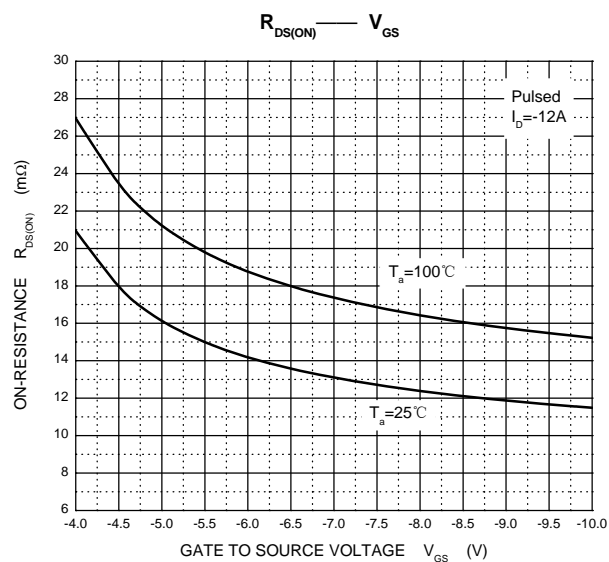
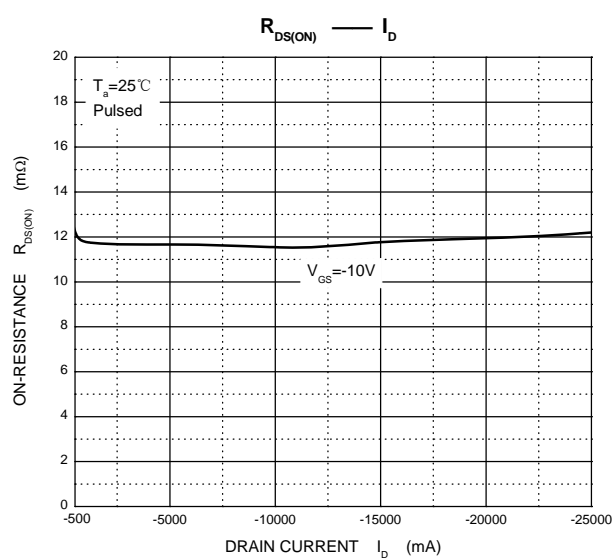
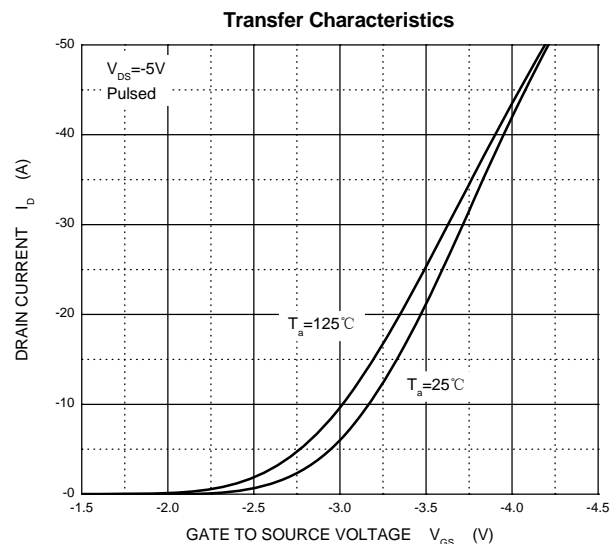
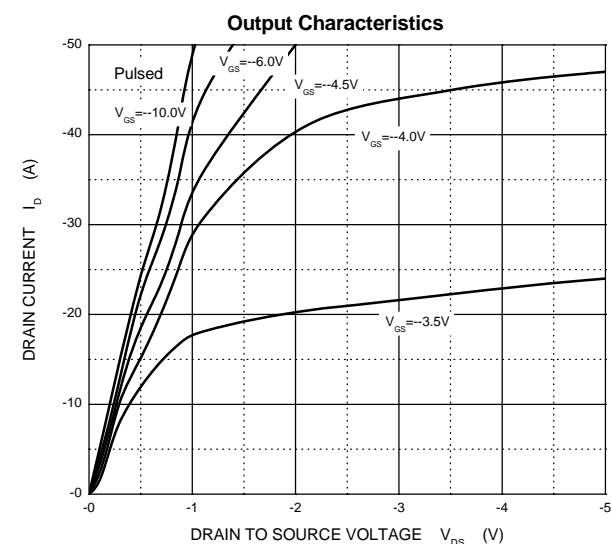
$T_a = 25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =-250μA	-40			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =-40V, V <sub>GS</sub> =0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
On characteristics (note1)						
Gate-threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.5	-1.85	-3	V
Static drain-source on-sate resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-12A		12	14	mΩ
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-12A	34			S
Dynamic characteristics (note 2)						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-20V,V <sub>GS</sub> =0V, f =1MHz		2960		pF
Output capacitance	C <sub>Oss</sub>			370		
Reverse transfer capacitance	C <sub>rss</sub>			310		
Switching characteristics (note 2)						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-12A		72		nC
Gate-source charge	Q <sub>gs</sub>			14		
Gate-drain charge	Q <sub>gd</sub>			15		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =-20V, I <sub>D</sub> =-20A  V <sub>GS</sub> =-10V,R <sub>G</sub> =3Ω,		10		ns
Turn-on rise time	t <sub>r</sub>			18		
Turn-off delay time	t <sub>d(off)</sub>			38		
Turn-off fall time	t <sub>f</sub>			24		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-20A			-1.2	V
Continuous drain-source diode forward current (note3)	I <sub>S</sub>				-40	A
Pulsed drain-source diode forward current	I <sub>SM</sub>				-160	A

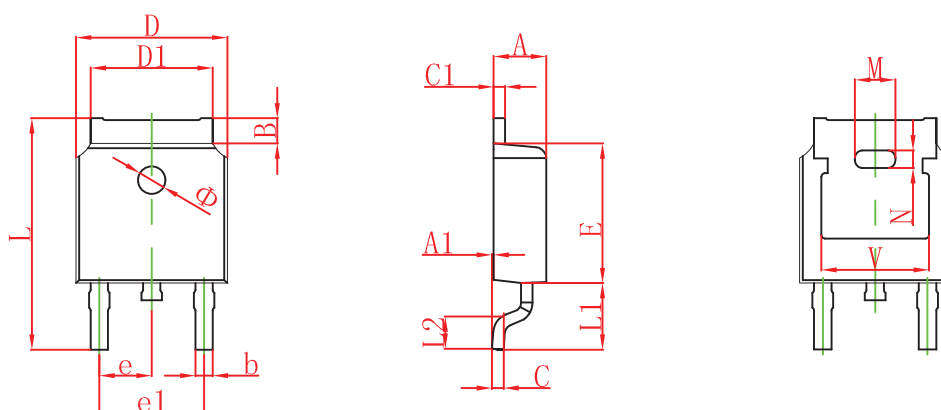
Notes:

1. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production.
3. Surface Mounted on FR4 Board,  $t \leq 10$  sec.

# Typical Characteristics

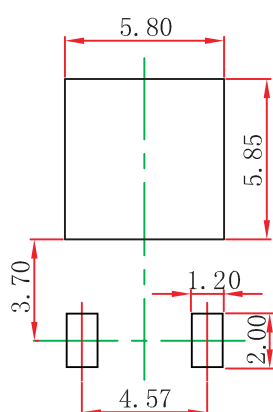


## TO-252(4R)-2L Package Outline Dimensions



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:

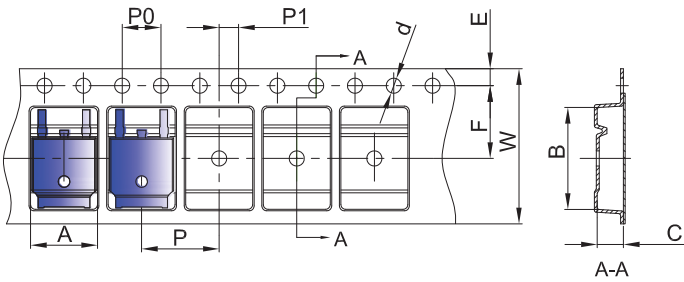
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

### NOTICE

JCET reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JCET does not assume any liability arising out of the application or use of any product described herein.

# To-252(4R)-2L Tape and Reel

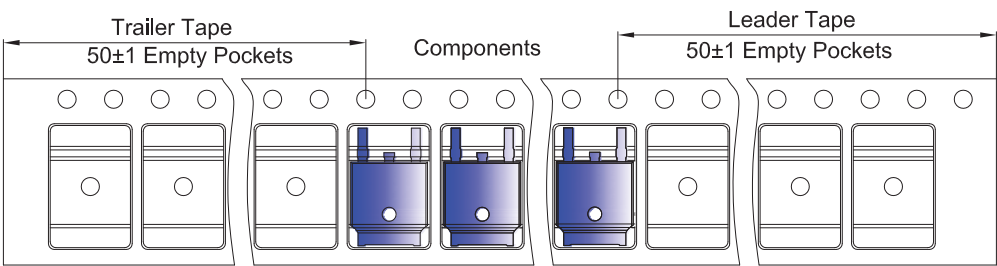
## TO-252 Embossed Carrier Tape



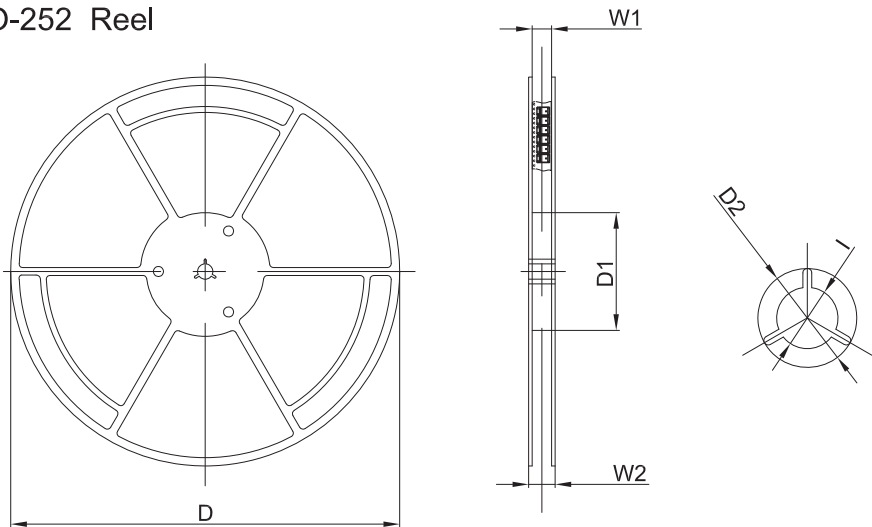
**Packaging Description:**  
 TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed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