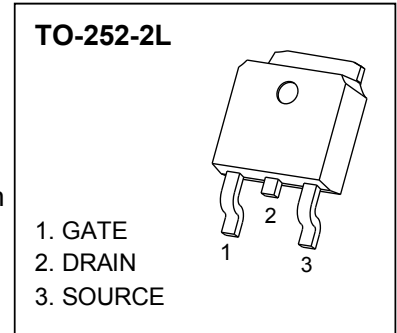




**TO-252-2L Plastic-Encapsulate MOSFETS**

**CJU30N10 N-Channel Power MOSFET**

<b>V<sub>(BR)DSS</sub></b>	<b>R<sub>DS(on)TYP</sub></b>	<b>I<sub>D</sub></b>
100V	24mΩ@10V	30A



**DESCRIPTION**

This advanced high voltage MOSFET is designed to stand high energy in the avalanche mode and switch efficiently. This new high energy device also offers a drain-to-source diode fast recovery time. Designed for high voltage, high speed switching applications such as power supplies,

converters, power motor controls and bridge circuits.

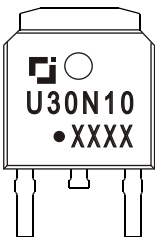
**FEATURES**

- High density cell design for ultra low R<sub>DS(on)</sub>
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E<sub>AS</sub>
- Special process technology for high ESD capability
- Excellent package for good heat dissipation

**APPLICATIONS**

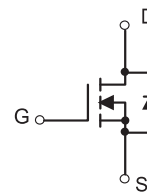
- Hard switched and high frequency circuits
- Uninterruptible power supply
- Power switching application

**MARKING**



U30N10 = Device code.  
 Solid dot = Green molding compound device if none, the normal device.  
 XXXX = Code.

**EQUIVALENT CIRCUIT**



**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V <sub>DS</sub> )	V <sub>DS</sub>	100	V
Drain-Source Voltage (V <sub>DS</sub> )	V <sub>DS</sub>	100	V
Drain Current (I <sub>D</sub> )	I <sub>D</sub>	30	A
Gate-Source Voltage (V <sub>GS</sub> )	V <sub>GS</sub>	120	V
Drain Current (I <sub>D</sub> )	I <sub>D</sub>	156	A
Gate-Source Voltage (V <sub>GS</sub> )	V <sub>GS</sub>	85	V
Drain-Source Voltage (V <sub>DS</sub> )	V <sub>DS</sub>	100	V
Thermal Resistance from Junction to Case	R <sub>θJC</sub>	1.47	°C/W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55~+150	°C

# MOSFET ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 80V, V_{GS} = 0V$	$T_J = 25^\circ\text{C}$		1	$\mu A$
			$T_J = 125^\circ\text{C}$		100	
Gate-body leakage current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
<b>On characteristics</b> <sup>④</sup>						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	2.0	2.5	V
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 15A$		24	31	m $\Omega$
Forward transconductance	$g_{fs}$	$V_{DS} = 5V, I_D = 10A$		15		S
<b>Dynamic characteristics</b> <sup>④ ⑤</sup>						
Input capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		2465	4930	$\mu F$
Output capacitance	$C_{oss}$			118	236	
Reverse transfer capacitance	$C_{rss}$			108	216	
Gate resistance	$R_g$	$f = 1MHz$		2.3		$\Omega$
<b>Switching characteristics</b> <sup>④ ⑤</sup>						
Total gate charge	$Q_g$	$V_{DS} = 50V, V_{GS} = 10V, I_D = 10A$		62	124	nC
Gate-source charge	$Q_{gs}$			6.2	12	
Gate-drain charge	$Q_{gd}$			15	30	
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 30V, V_{GS} = 10V, I_D = 2A, R_G = 3\Omega, R_L = 5\Omega$		7		ns
Turn-on rise time	$t_r$			7		
Turn-off delay time	$t_{d(off)}$			29		
Turn-off fall time	$t_f$			7		
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage	$V_{SD}$ <sup>④</sup>	$V_{GS} = 0V, I_S = 40A$			1.2	V
Continuous drain-source diode forward current	$I_S$ <sup>①</sup>				30	A
Pulsed drain-source diode forward current	$I_{SM}$ <sup>②</sup>				120	A

Notes:

1.  $T_C = 25^\circ\text{C}$  Limited only by maximum temperature allowed.

2.  $P_W \leq 10\mu s$ , Duty cycle  $\leq 1\%$ .

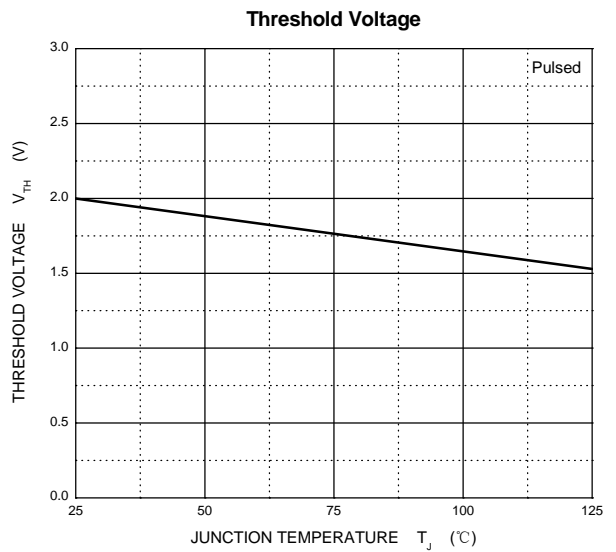
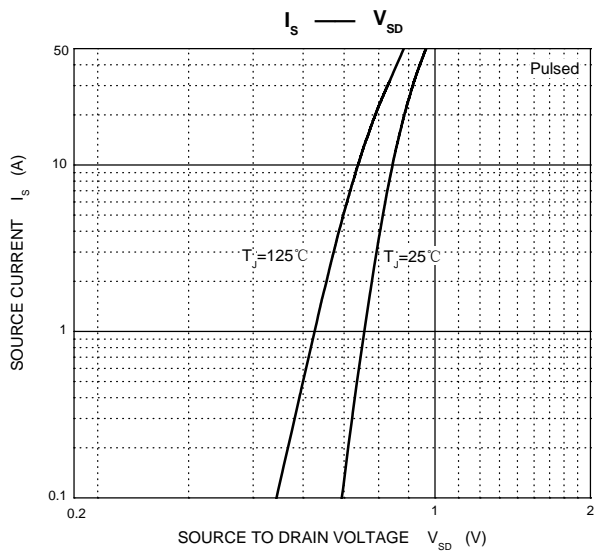
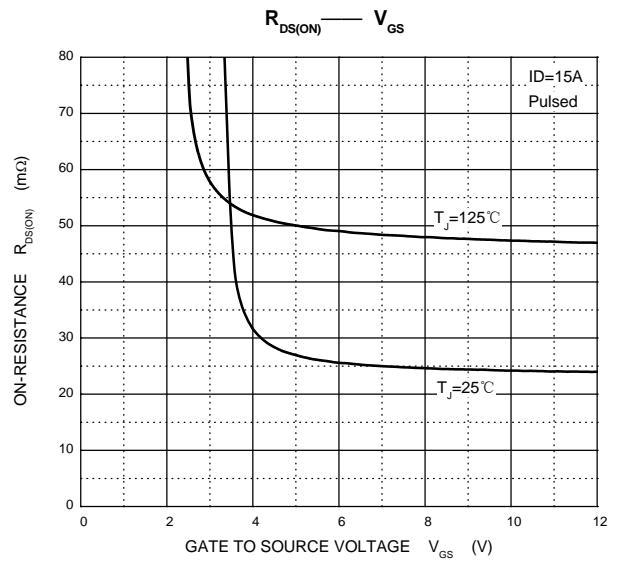
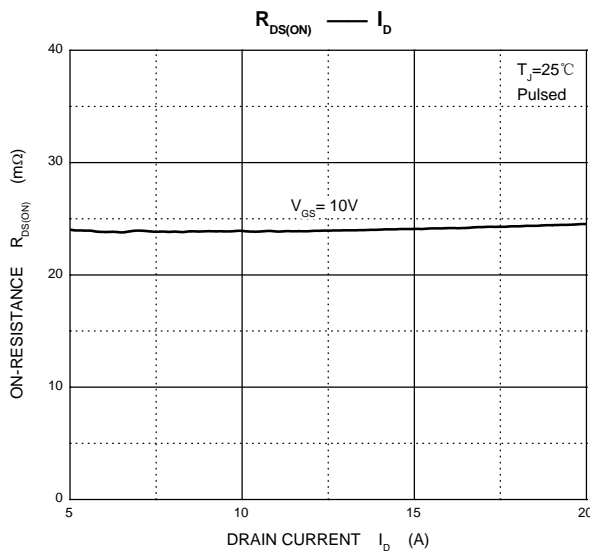
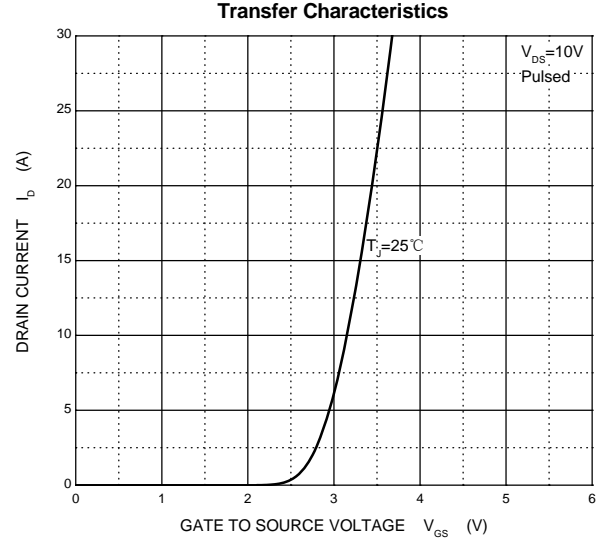
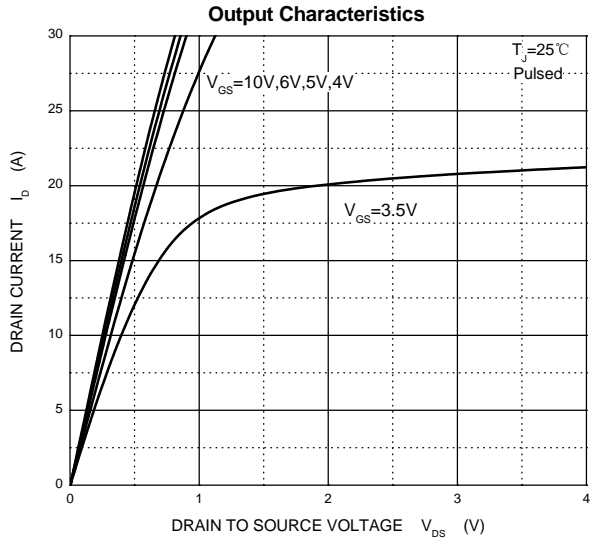
3. EAS condition:  $V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, R_g = 25\Omega$  Starting  $T_J = 25^\circ\text{C}$ .

4. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

5. Guaranteed by design, not subject to production.

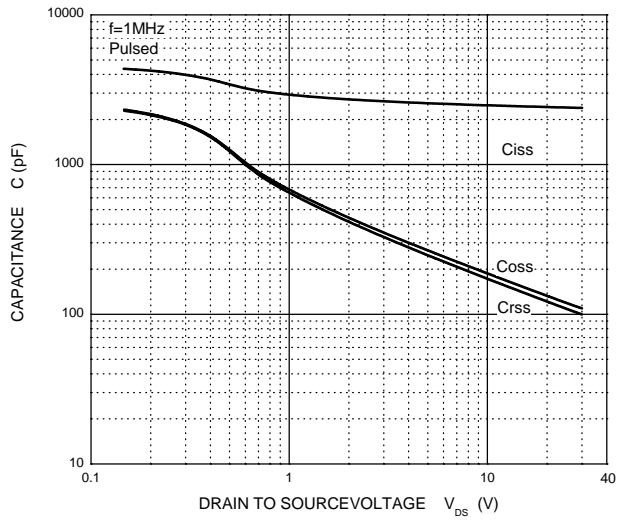
6. The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_a = 25^\circ\text{C}$ .

# Typical Characteristics

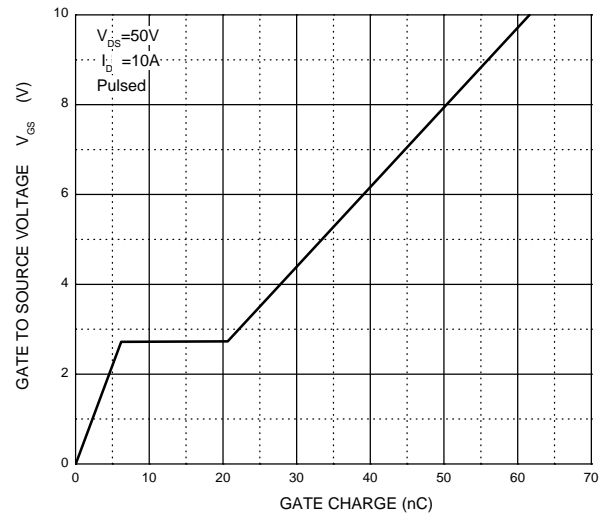


# Typical Characteristics

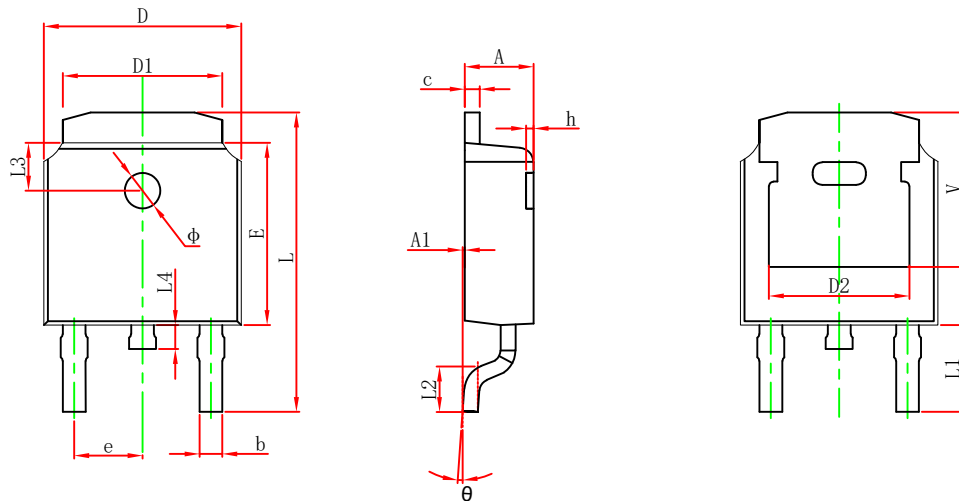
### Capacitances



### Gate Charge

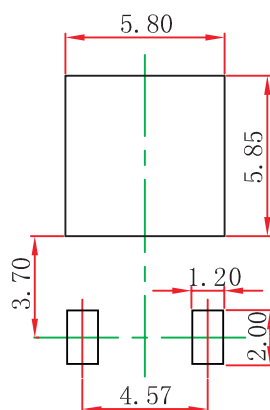


## TO-252-2L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
$\Phi$	1.100	1.300	0.043	0.051
$\theta$	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

## TO-252-2L Suggested Pad Layout



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

### NOTICE

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

# TO-252-2L Tape and Reel

## TO-252-2L Embossed Carrier Tape

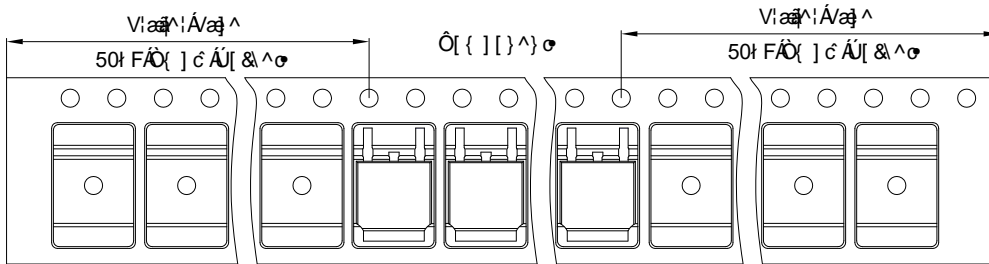


### Packaging Description:

TO-252-2L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Hear 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 2500 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	Φ1.55	1.75	7.50	4.00	8.00	2.00	16.00

## TO-252-2L Tape Leader and Trailer



## TO-252-2L Reel



Dimensions are in millimeter						
Reel	D	D1	D2	W1	W2	l
13" Dia	330.00	100.00	Φ21.00	16.40	21.40	Φ13.00

Reel	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
2500 pcs	13 inch	5000 pcs	360×360×65	25000 pcs	378×358×382