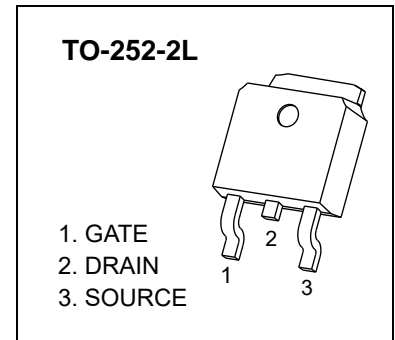




TO-252-2L Plastic-Encapsulate MOSFETS

CJU02N50M1 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
500V	4.2Ω@10V	2A



GENERAL DESCRIPTION

The CJU02N50M1 is an N-channel mode power MOSFET using advanced technology to provide customers with planar stripe. This technology specializes in allowing a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode. The CJU02N50M1 is universally applied in high efficiency switch mode power supply.

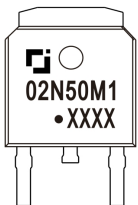
FEATURE

- Excellent package for good heat dissipation
- High switching speed
- 100% avalanche tested

APPLICATION

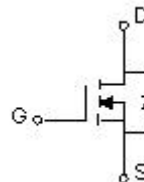
- Power switching application
- DC/DC converters

MARKING



02N50M1= Device code.
Solid dot = Green molding compound device,
if none, the normal device
XXXX=Code

EQUIVALENT CIRCUIT



Maximum ratings ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	500	V
Gate-Source Voltage	V_{GS}	±30	
Continuous Drain Current	$I_D^{(1)}$	2	A
Pulsed Drain Current	$I_{DM}^{(1)(2)}$	8	
Single Pulsed Avalanche Energy	$E_{AS}^{(3)}$	118	mJ
Power Dissipation	$P_D^{(1)}$	83.3	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}^{(6)}$	100	$^{\circ}\text{C}/\text{W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}^{(1)}$	1.5	$^{\circ}\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~+150	$^{\circ}\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS

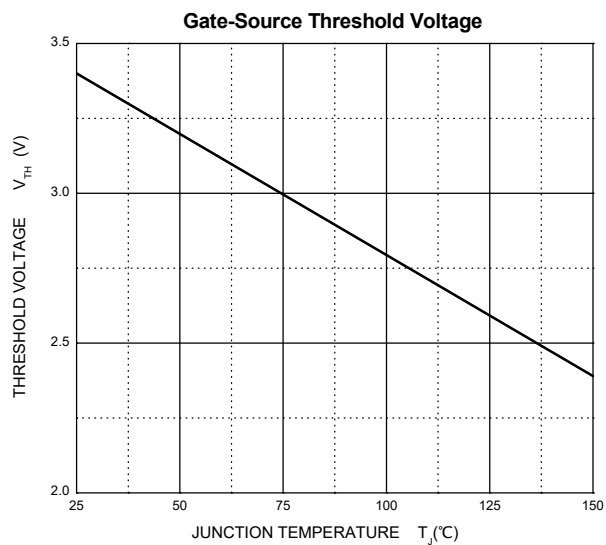
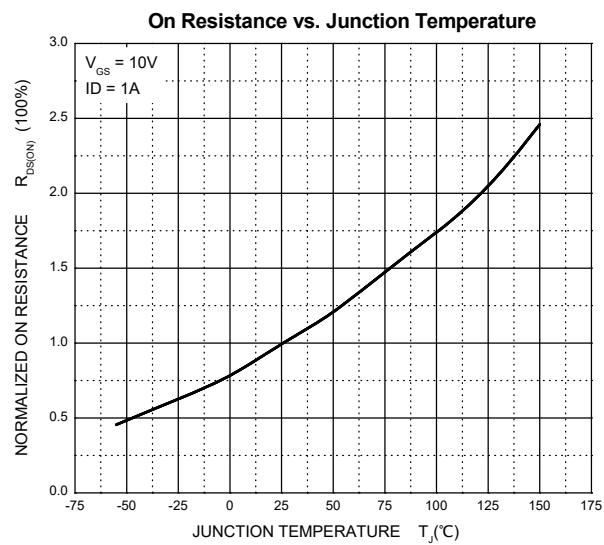
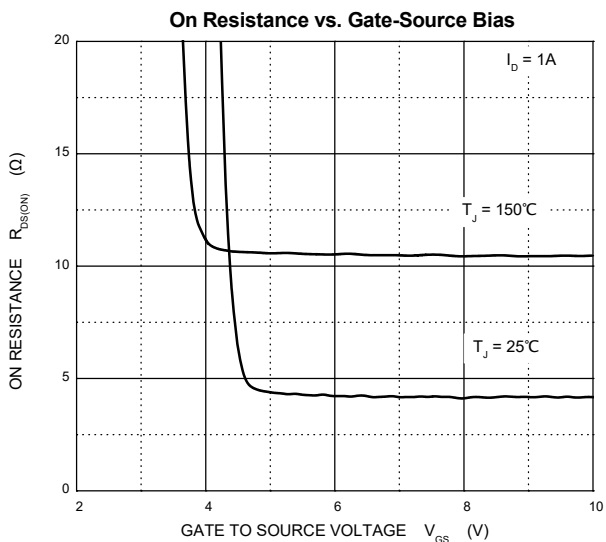
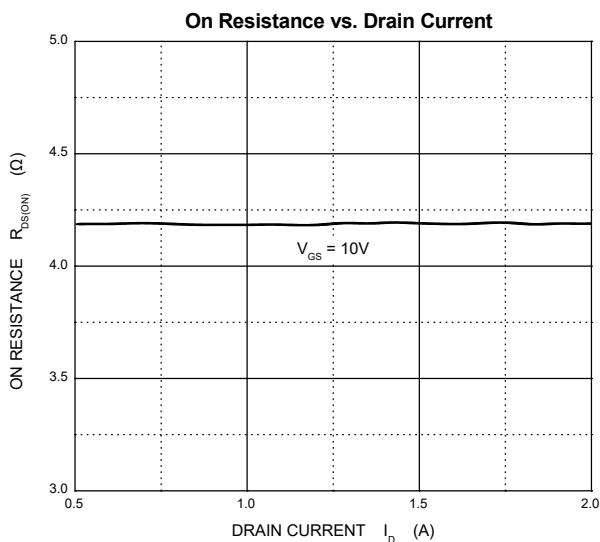
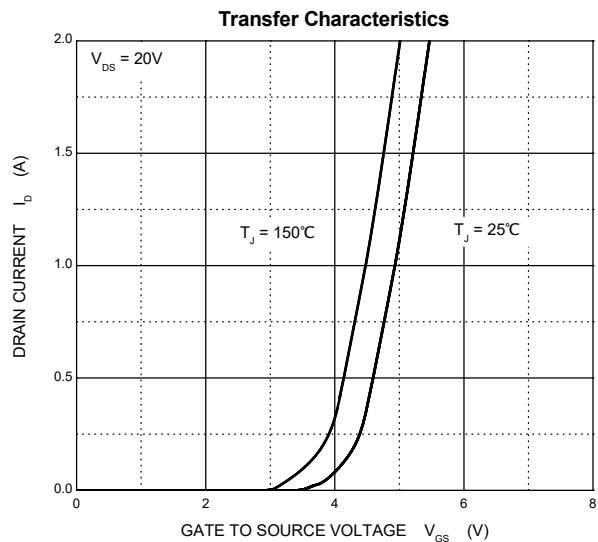
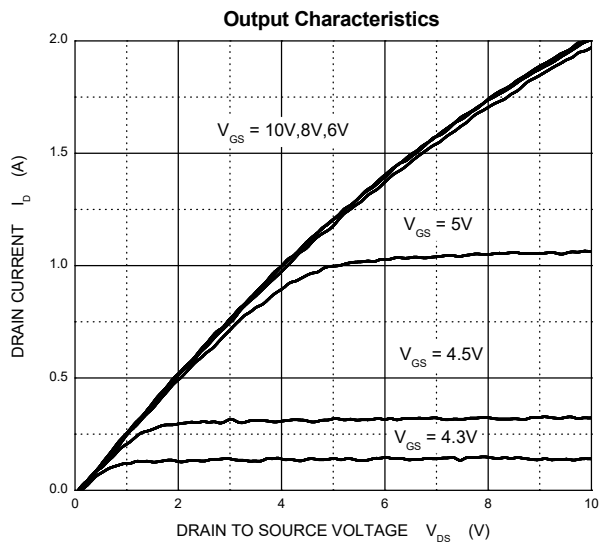
$T_J=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
Off characteristics							
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	500	-	-	V	
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 500V, V_{GS} = 0V$	$T_J = 25^\circ\text{C}$	-	-	1.0	μA
			$T_J = 125^\circ\text{C}$	-	-	100	
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 30V$	-	-	± 100	nA	
On characteristics ^④							
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	3.4	4.0	V	
Static drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 1A$	-	4.2	5.5	Ω	
Dynamic characteristics ^⑤							
Input capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 1\text{MHz}$	-	163	-	μF	
Output capacitance	C_{oss}		-	15	-		
Reverse transfer capacitance	C_{rss}		-	2	-		
Gate resistance	R_g	$f = 1\text{MHz}$	-	5.5	-	Ω	
Switching characteristics ^⑤							
Total gate charge	Q_g	$V_{DS} = 50V, V_{GS} = 6V, I_D = 2A$	-	2.3	-	nC	
Total gate charge	Q_g	$V_{DS} = 50V, V_{GS} = 10V, I_D = 2A$	-	3.9	-		
Gate-source charge	Q_{gs}		-	0.9	-		
Gate-drain charge	Q_{gd}		-	1.7	-		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 250V, V_{GS} = 10V, R_G = 10\Omega, I_D = 2A$	-	3.7	-	ns	
Turn-on rise time	t_r		-	4.1	-		
Turn-off delay time	$t_{d(off)}$		-	6.1	-		
Turn-off fall time	t_f		-	4.8	-		
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD} ^④	$V_{GS} = 0V, I_S = 2A$	-	-	1.2	V	
Maximum continuous drain-source diode forward current	I_S ^①		-	-	2	A	
Maximum pulsed drain-source diode forward current	I_{SM} ^{①②}		-	-	8	A	
Reverse recovery time	t_{rr}	$dI_F/dt = 100A/\mu s, I_S = 2A, V_{DD} = 50V$	-	163	-	ns	
Reverse recovery charge	Q_{rr}		-	561	-	nC	

Notes :

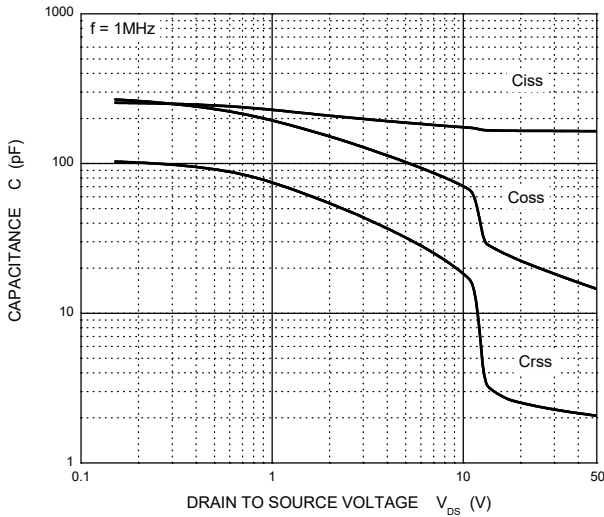
- $T_C = 25^\circ\text{C}$ Limited only by maximum temperature allowed.
- $P_W \leq 10\mu s$, Duty cycle $\leq 1\%$.
- EAS condition: $V_{DD} = 200V, V_{GS} = 10V, L = 10\text{mH}, R_g = 25\Omega$ Starting $T_J = 25^\circ\text{C}$.
- Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production.
- Device mounted on 1 in² FR-4 board with 2oz. single-sided Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Typical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise specified)

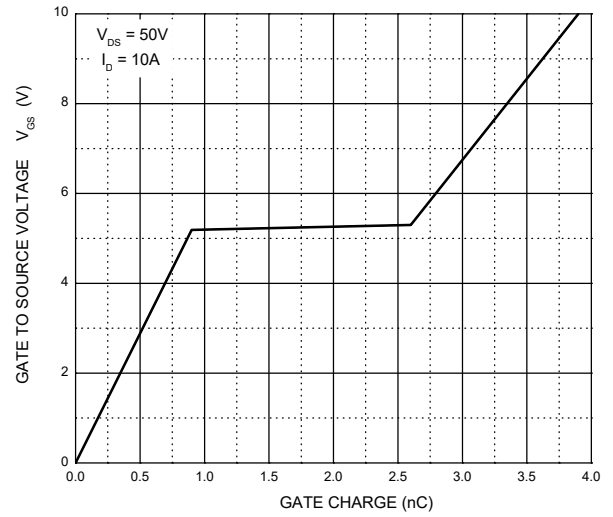


Typical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise specified)

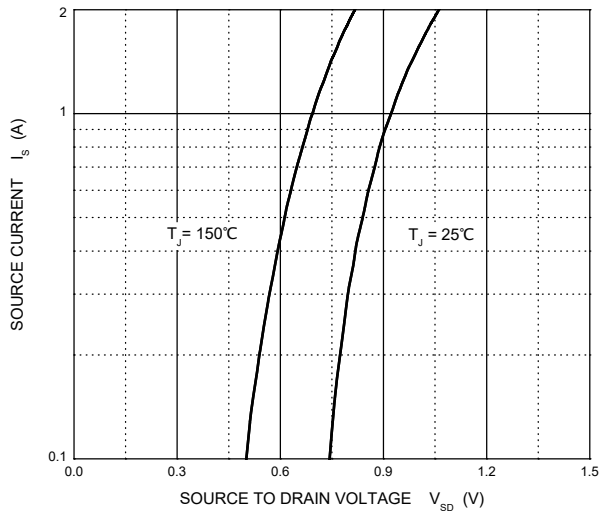
Typical Capacitances



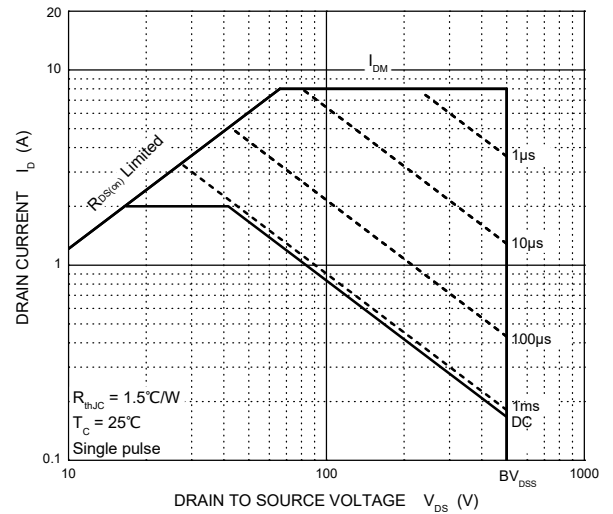
Gate Charge



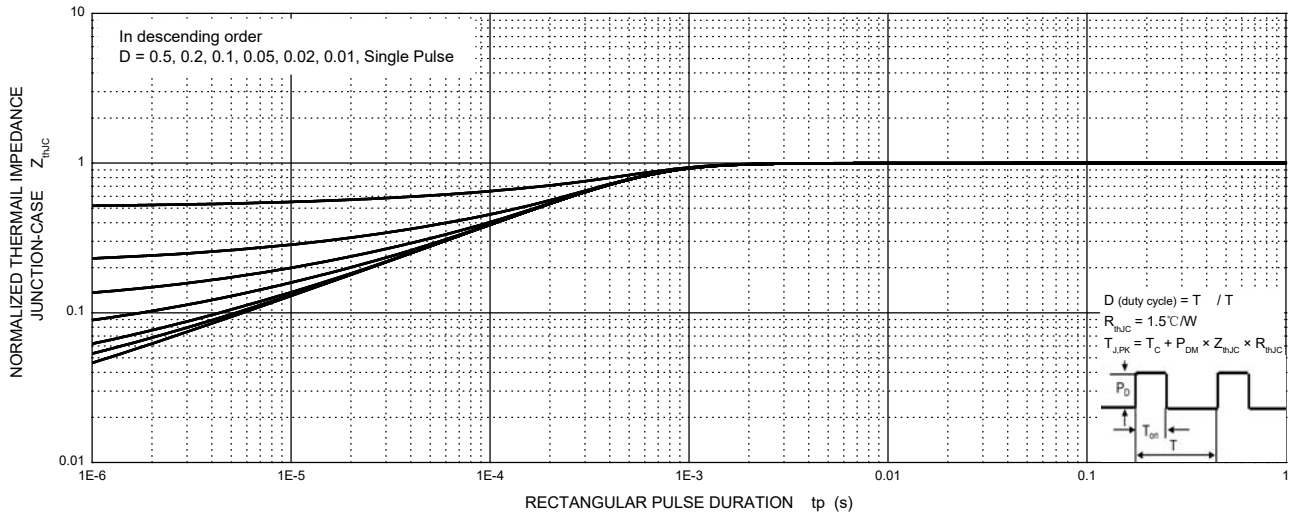
Source-Drain Diode Forward Characteristics



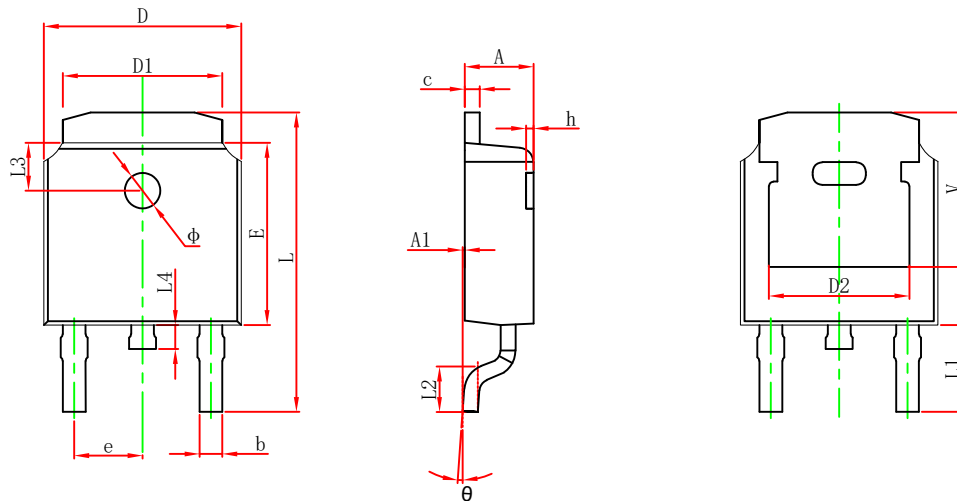
Maximum Safe Operating Area



Transient Thermal Impedance, Junction-Case

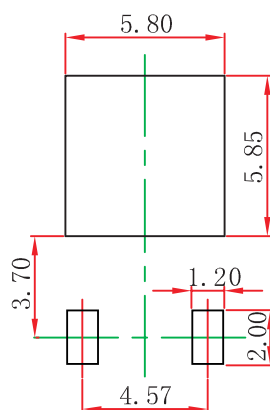


TO-252-2L Package Outline Dimensions



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
Φ	1.100	1.300	0.043	0.051
θ	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: $\pm 0.05\text{mm}$.
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

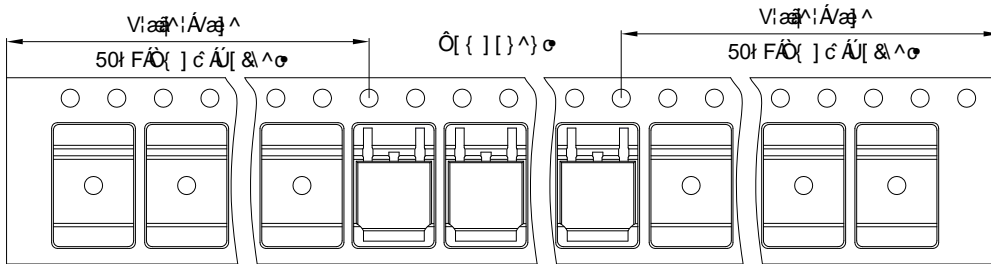


Packaging Description:

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