

## N-Channel Power MOSFET

### FEATURES

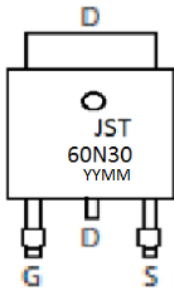
$R_{DS(ON)} \leq 9m\ \Omega$  @VGS=10V

$R_{DS(ON)} \leq 12m\ \Omega$  @VGS=4.5V

### APPLICATIONS

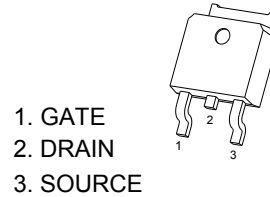
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

### MARKING

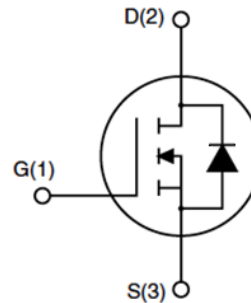


YYMM=Date Code

### TO-252-2L



### EQUIV ALENT CIRCUIT



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	60	A
Pulsed Drain Current	$I_{DM}$	240	A
Single Pulsed Avalanche Energy	$E_{AS}^{(1)}$	75	mJ
Power Dissipation	$P_D$	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$
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	$^\circ\text{C}$

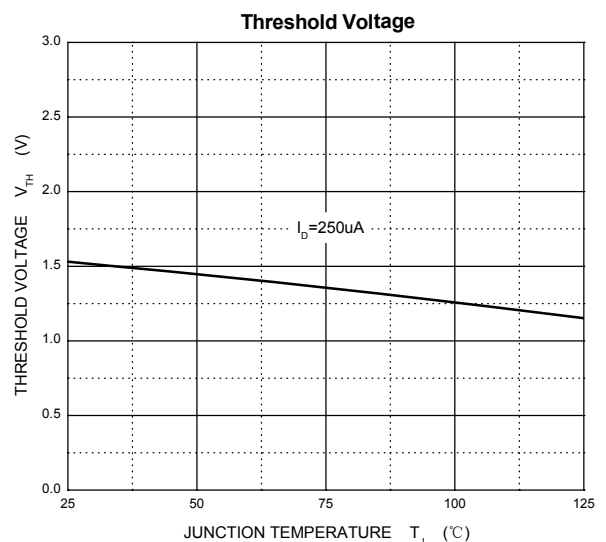
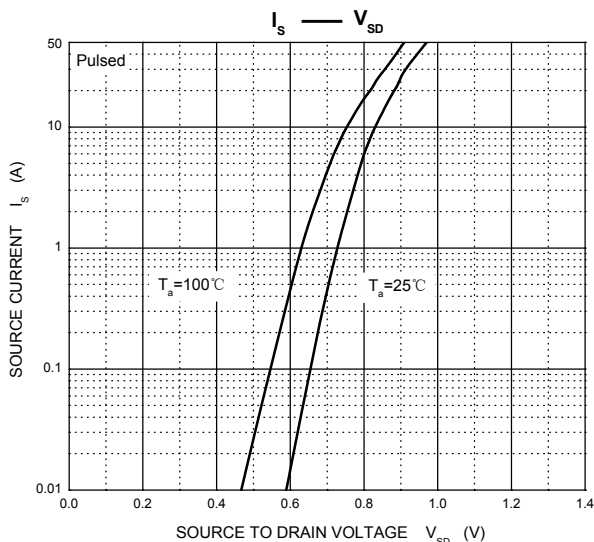
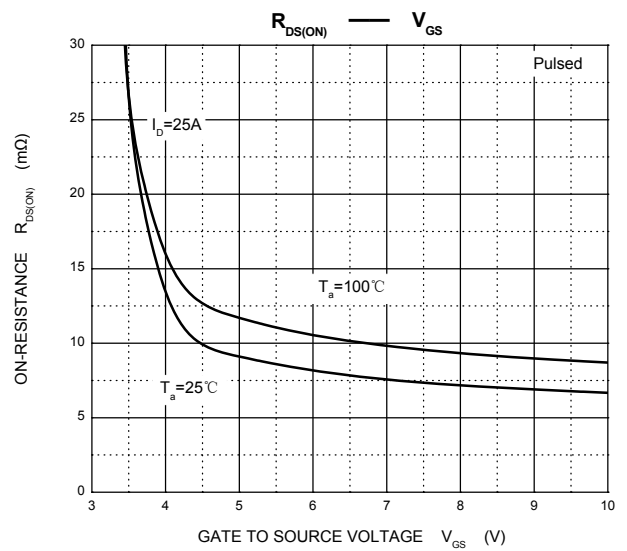
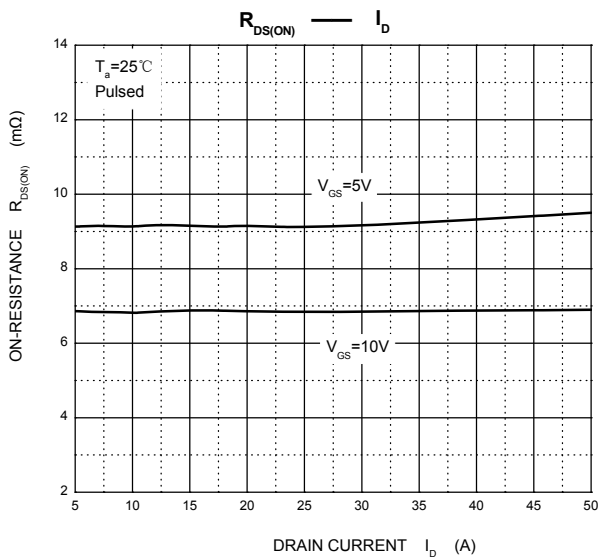
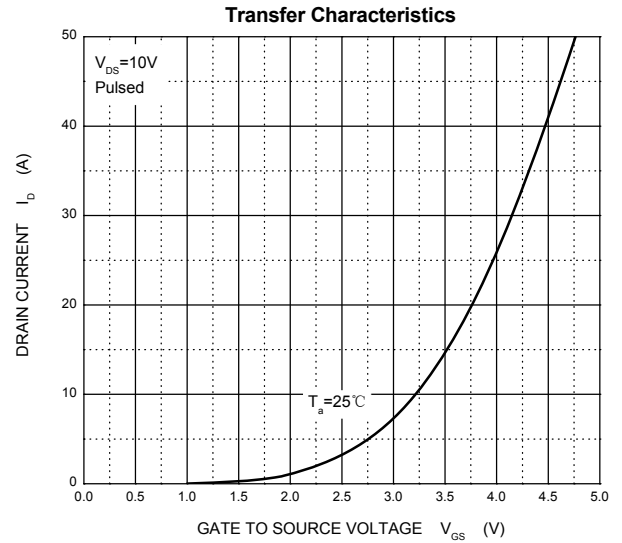
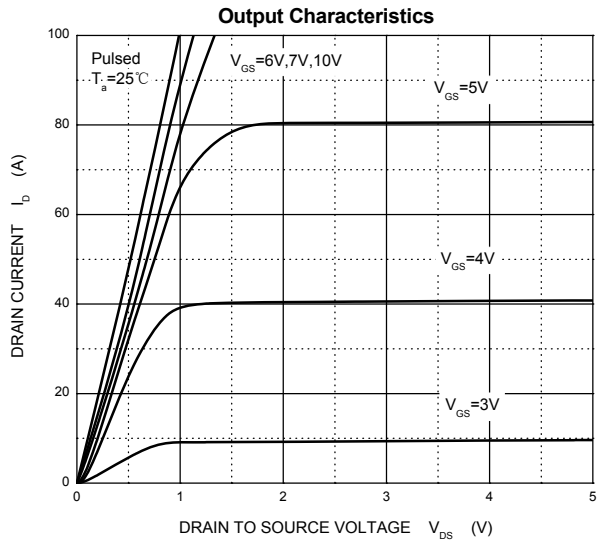
(1). $E_{AS}$  condition:  $V_{DD}=20V, L=0.5mH, R_G=25\Omega$ , Starting  $T_J = 25^\circ\text{C}$

**MOSFET ELECTRICAL CHARACTERISTICS**
**T<sub>a</sub>=25 °C unless otherwise specified**

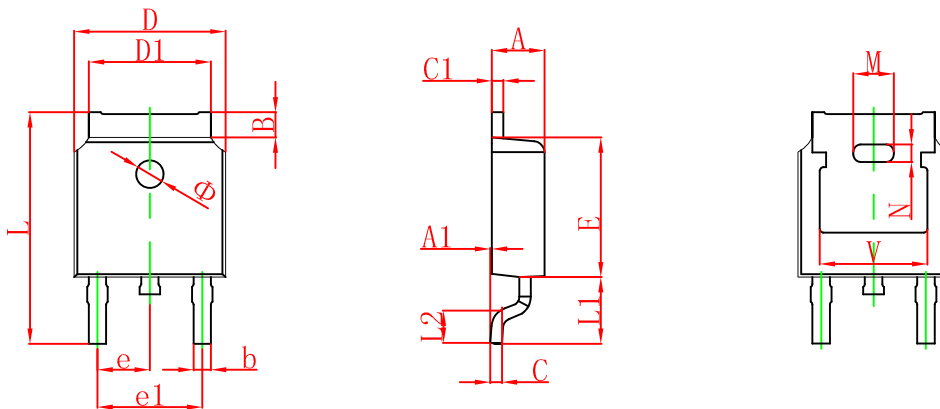
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	30	34		V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
<b>On characteristics (note1)</b>						
Gate-threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.7	3.0	V
Static drain-source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =15A		9.5	12	mΩ
		V <sub>GS</sub> =10V, I <sub>D</sub> =15A		7	9	mΩ
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =15A	15			S
<b>Dynamic characteristics (note 2)</b>						
Input capacitance	C <sub>iSS</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f =1MHz		2000		pF
Output capacitance	C <sub>oss</sub>			280		
Reverse transfer capacitance	C <sub>rss</sub>			160		
<b>Switching characteristics (note 2)</b>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =25A		23		nC
Gate-source charge	Q <sub>gs</sub>			7		
Gate-drain charge	Q <sub>gd</sub>			4.5		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V, R <sub>G</sub> =1.8Ω		10		ns
Turn-on rise time	t <sub>r</sub>			8		
Turn-off delay time	t <sub>d(off)</sub>			30		
Turn-off fall time	t <sub>f</sub>			5		
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage(note1)	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =10A			1.2	V
Continuous drain-source diode forward current	I <sub>S</sub>				60	A
Pulsed drain-source diode forward current	I <sub>SM</sub>				240	A

**Notes:**

1. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.
2. Guaranteed by design, not subject to production.



## 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

**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05mm.

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