

SOT-89-3L Plastic-Encapsulate Transistors 20V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	18mΩ@10V	4A
	20mΩ@4.5V	
	25mΩ@2.5V	

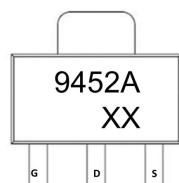
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance

Application

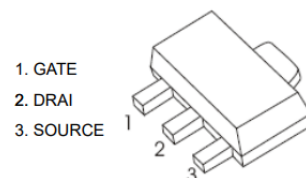
- Power Switching Application

MARKING:

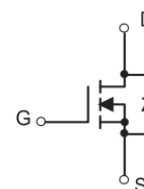


9452A = Device Code
XX = Date Code

SOT-89-3L



Schematic diagram



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

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	20	V
Gate - Source Voltage	V_{GS}	±12	V
Continuous Drain Current ^{1,5}	I_D	4	A
Pulsed Drain Current ²	I_{DM}	16	A
Power Dissipation ^{4,5}	P_D	0.48	W
Thermal Resistance from Junction to Ambient ⁵	$R_{\theta JA}$	260	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

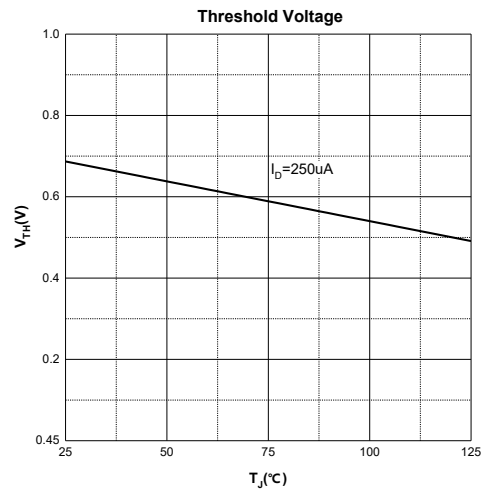
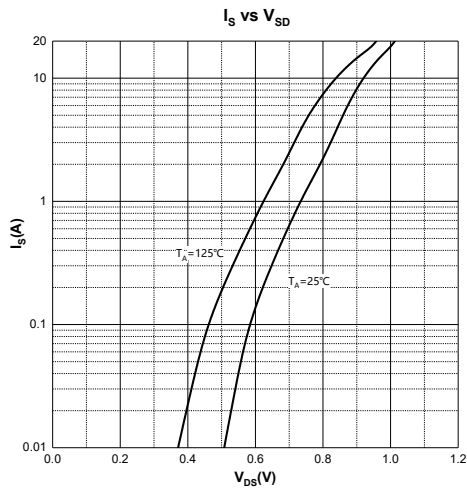
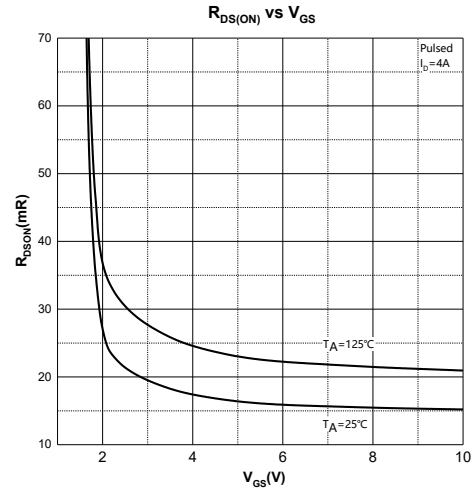
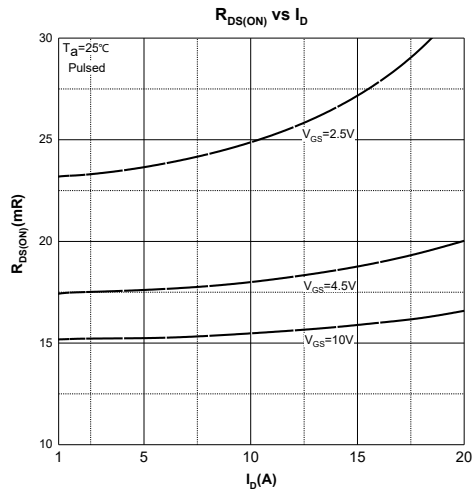
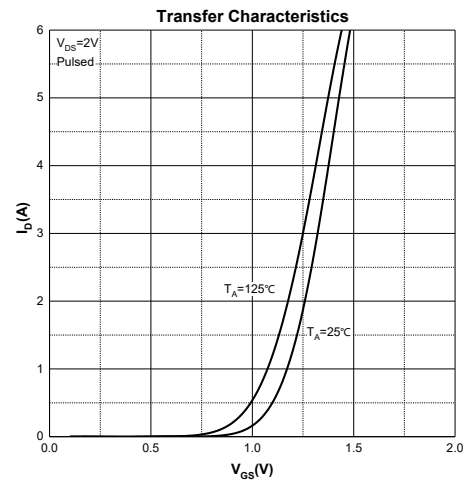
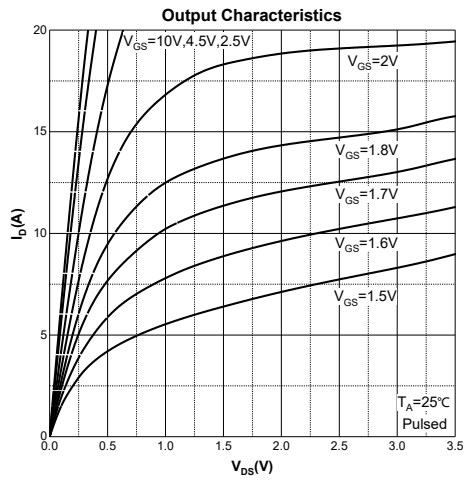
MOSFET ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
On Characteristics ³						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.4	0.7	1	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 4A		18	38	mΩ
		V _{GS} = 4.5V, I _D = 4A		20	50	
		V _{GS} = 2.5V, I _D = 3A		25	80	
Forward Transconductance	g _{FS}	V _{DS} = 4.5V, I _D = 4A	3			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz		336		pF
Output Capacitance	C _{oss}			78		
Reverse Transfer Capacitance	C _{rss}			70		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		1.6		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 4A		6		nC
Gate-source Charge	Q _{gs}			1		
Gate-drain Charge	Q _{gd}			1.7		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 10V, V _{GS} = 4.5V, R _L = 2.5Ω, R _G = 3Ω		4		ns
Turn-on Rise Time	t _r			15		
Turn-off Delay Ttime	t _{d(off)}			20		
Turn-off Fall Time	t _f			25		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = 4A			1.2	V

Notes :

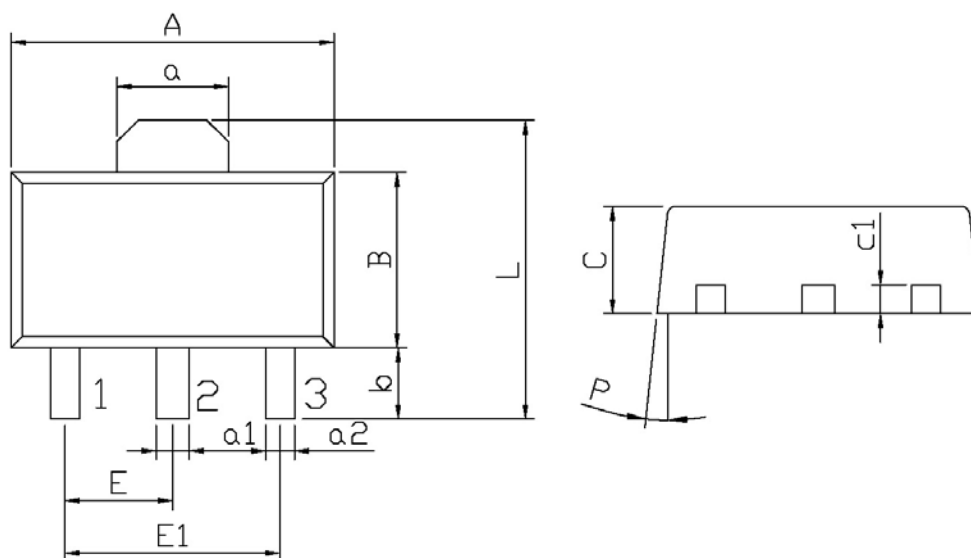
- 1.The maximum current rating is limited by package.
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 4.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.
- 5.Device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Typical Characteristics



SOT-89

单位: mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.4	4.7	a1	0.36	0.56
B	2.35	2.65	a2	0.30	0.50
L	3.878	4.478	C	1.40	1.70
a	1.45	1.65	c1	0.35	0.50
E	1.40	1.60	P	6°	
E1	2.80	3.20			
b	0.80	1.20			