

**60V N-Channel Enhancement MOSFET**

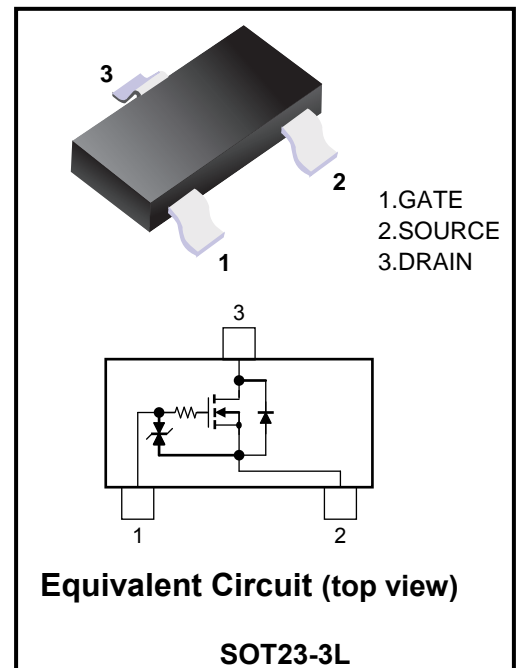
**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	200mA
<b>V<sub>DSS</sub></b>	60V
<b>R<sub>DS(on)-typ</sub>(@V<sub>GS</sub>=10V)</b>	<3.9Ω( <b>Type:2.8mΩ</b> )
<b>R<sub>DS(on)-typ</sub>(@V<sub>GS</sub>=5V)</b>	<8.1mΩ( <b>Type:5.4mΩ</b> )
<b>R<sub>DS(on)-typ</sub>(@V<sub>GS</sub>=4.5V)</b>	<4.7mΩ( <b>Type:3.2mΩ</b> )

**High Speed Switching Applications**

⚡ESD protected gate

<b>Marking Code</b>	
<b>2N7002AK</b>	<b>NJ.</b>



**Absolute Maximum Ratings Ta = 25°C**

Characteristic		Symbol	Rating	Unit
Drain- source voltage		V <sub>DSS</sub>	60	V
Gate-source voltage		V <sub>GSS</sub>	± 20	V
Drain current (Note1)	DC	I <sub>D</sub>	200	mA
	Pulse	I <sub>DP</sub>	760	
Power dissipation(Note 3) (Note 4)		P <sub>D</sub>	320	mW
		P <sub>D</sub>	1000	
Channel temperature		T <sub>ch</sub>	150	°C
Storage temperature		T <sub>stg</sub>	-55 to 150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Note 1: The channel temperature should not exceed 150°C during use.

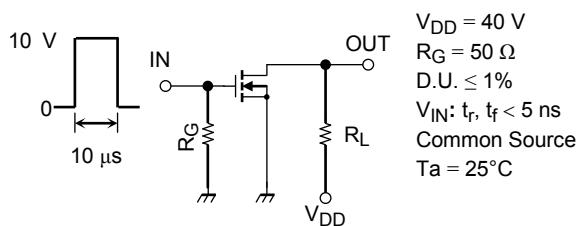
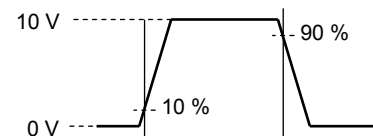
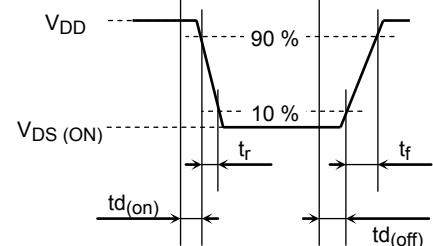
Note 2: Pulse width ≤ 10 μs, Duty ≤ 1%

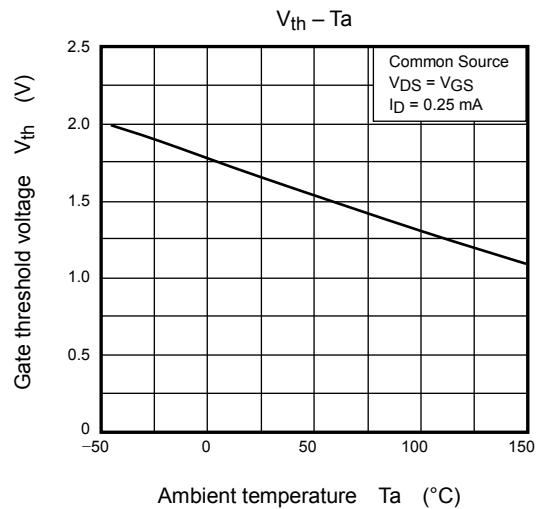
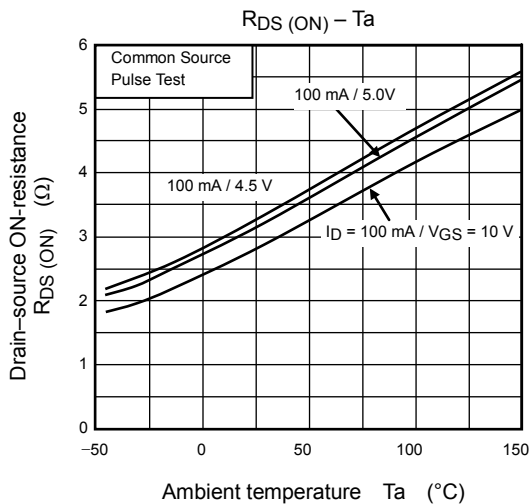
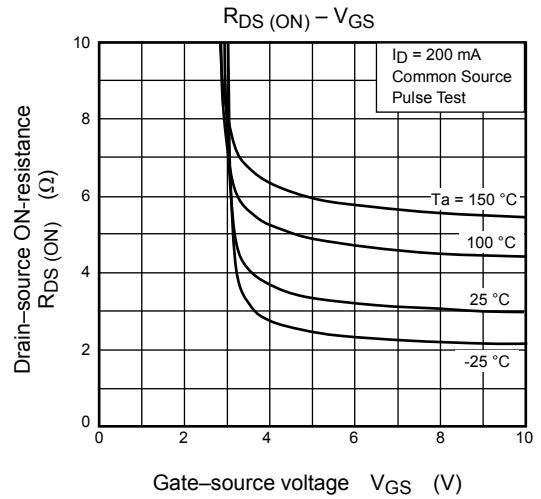
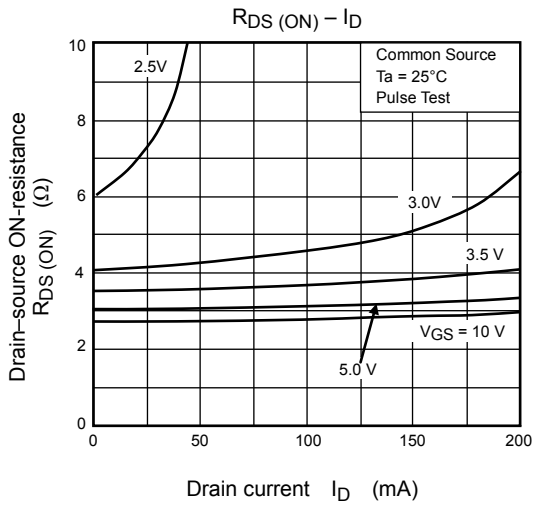
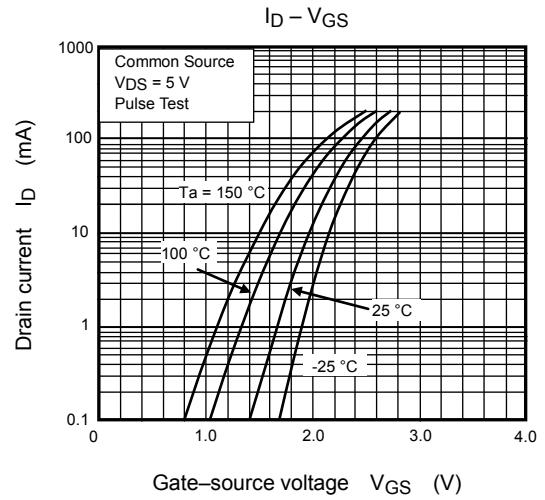
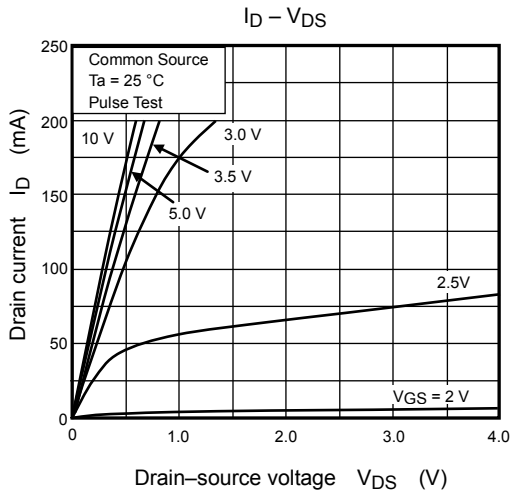
Note 3: Mounted on an FR4 board  
(25.4 mm · 25.4 mm · 1.6 mm, Cu Pad: 0.42 mm<sup>2</sup> x 3)

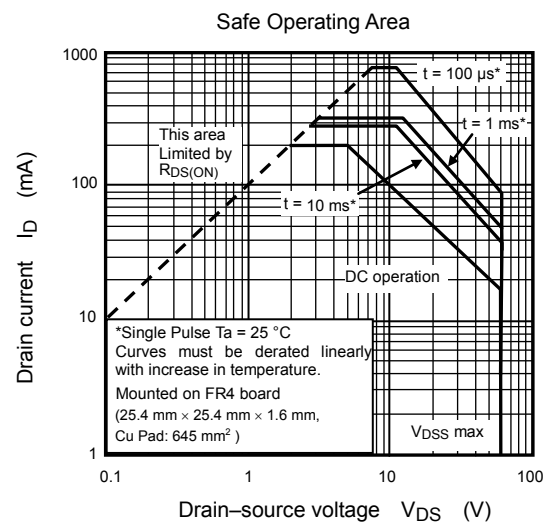
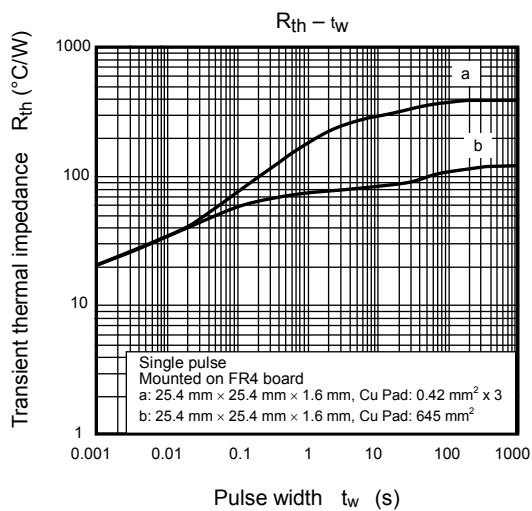
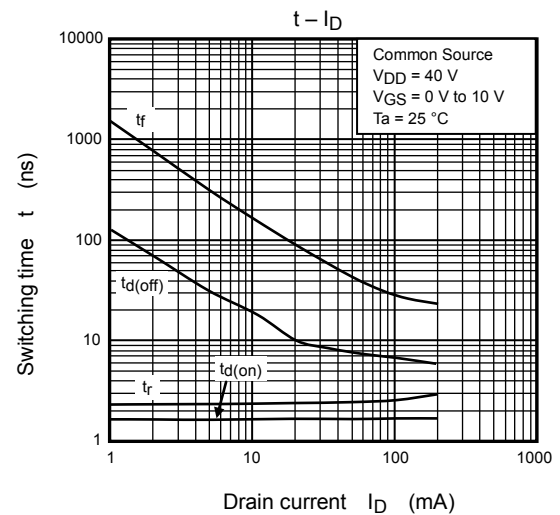
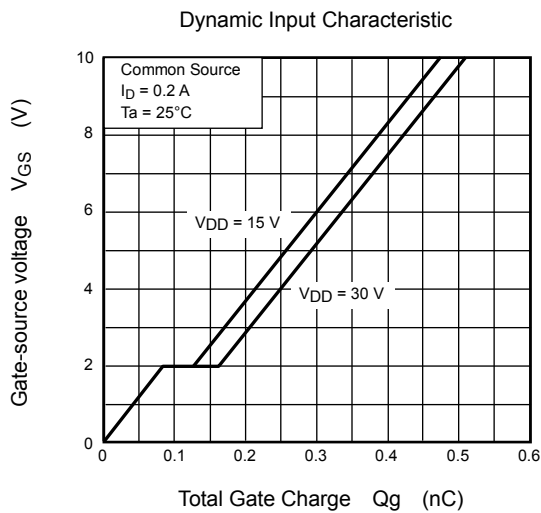
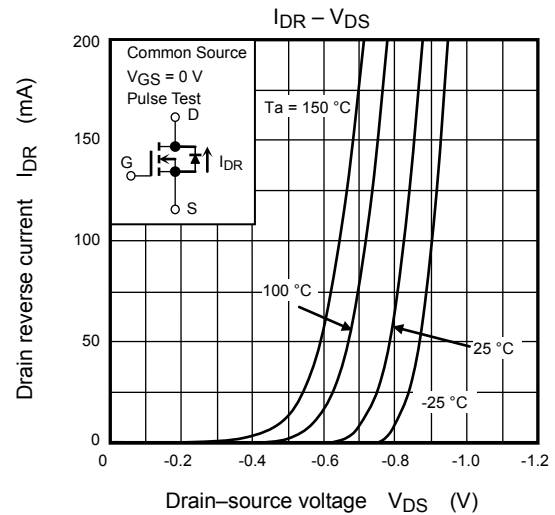
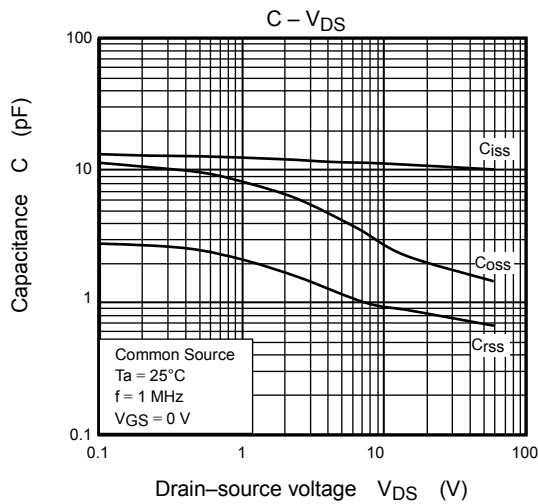
Note 4: Mounted on an FR4 board  
(25.4 mm · 25.4 mm · 1.6 mm, Cu Pad: 645 mm<sup>2</sup>)

**Electrical Characteristics Ta = 25°C**

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit	
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 250\mu A, V_{GS} = 0 V$	60	—	—	V	
Drain cutoff current	$I_{DSS}$	$V_{DS} = 60 V, V_{GS} = 0 V$	—	—	1	$\mu A$	
		$V_{DS} = 60 V, V_{GS} = 0 V, T_J = 150^\circ C$	—	—	200		
Gate leakage current	$I_{GSS}$	$V_{GS} = \pm 16 V, V_{DS} = 0 V$	—	—	$\pm 2$	$\mu A$	
		$V_{GS} = \pm 10 V, V_{DS} = 0 V$	—	—	$\pm 0.5$		
		$V_{GS} = \pm 5 V, V_{DS} = 0 V$	—	—	$\pm 0.1$		
Gate threshold voltage	$V_{th}$	$I_D = 250 \mu A, V_{DS} = V_{GS}$	1.1	—	2.1	V	
Forward transfer admittance (Note 5)	$ Y_{fs} $	$V_{DS} = 10 V, I_D = 200 mA$	—	450	—	mS	
Drain-source ON-resistance (Note 5)	$R_{DS(ON)}$	$I_D = 100 mA, V_{GS} = 10 V$	—	2.8	3.9	$\Omega$	
		$I_D = 100 mA, V_{GS} = 10 V, T_J = 150^\circ C$	—	5.4	8.1		
		$I_D = 100 mA, V_{GS} = 5 V$	—	3.1	4.4		
		$I_D = 100 mA, V_{GS} = 4.5 V$	—	3.2	4.7		
Total Gate Charge	$Q_{G(tot)}$	$V_{DS} = 30 V, I_D = 200 mA$ $V_{GS} = 4.5 V$	—	0.27	0.35	nC	
Gate-Source Charge	$Q_{GS}$		—	0.08	—		
Gate-Drain Charge	$Q_{GD}$		—	0.08	—		
Input capacitance	$C_{iss}$	$V_{DS} = 10 V, V_{GS} = 0 V, f = 1 MHz$	—	11	17	pF	
Output capacitance	$C_{oss}$		—	3	—		
Reverse transfer capacitance	$C_{rss}$		—	0.7	—		
Switching time	Turn-on delay time	$t_{d(on)}$	$V_{DD} = 40 V, I_D = 160 mA$ $V_{GS} = 0 V \text{ to } 10 V, R_G = 50 \Omega$	—	2	4	ns
	Rise time	$t_r$		—	3	—	
	Turn-off delay time	$t_{d(off)}$		—	7	14	
	Fall time	$t_f$		—	24	—	
Drain-source forward voltage (Note 5)	$V_{DSF}$	$I_D = -115 mA, V_{GS} = 0 V$	—	-0.87	-1.2	V	

**Switching Time Test Circuit**
**(a) Test Circuit**

**(b)  $V_{IN}$** 

**(c)  $V_{OUT}$** 


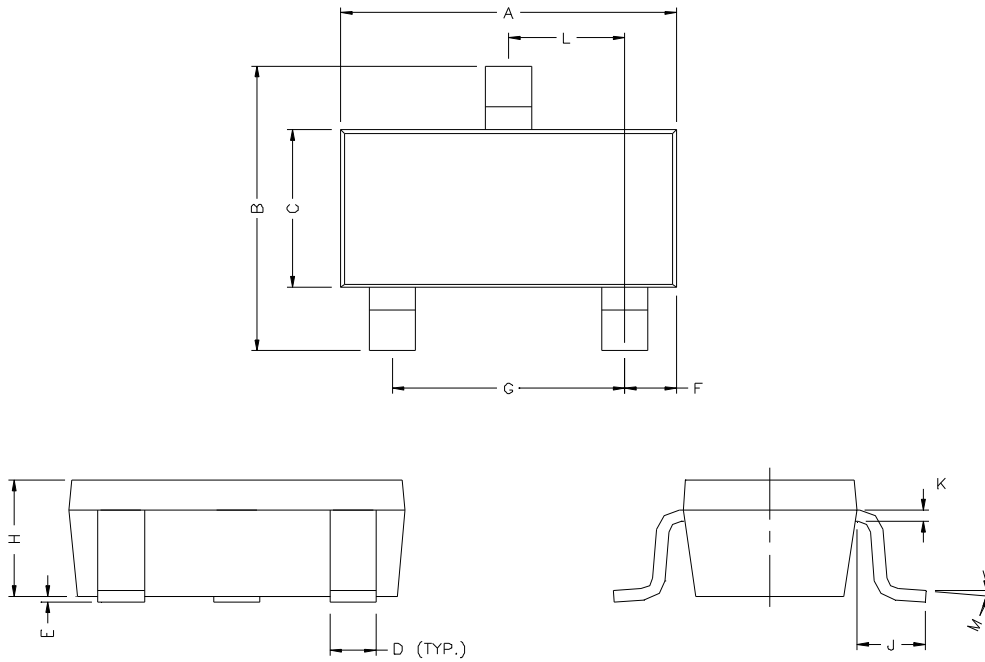




Note: The above characteristics curves are presented for reference only and not guaranteed by production test.

Package Outline

SOT23-3L



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	B	C	D	E	F	G	H	K	J	L	M
mm	2.70 3.10	2.65 2.95	1.50 1.70	0.35 0.50	0 0.10	0.45 0.55	1.9	1.00 1.30	0.10 0.20	0.40 -	0.85 1.15	0° 10°

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT23-3L	Tape/Reel, 7" reel	3000	EIA-481-1

单击下面可查看定价，库存，交付和生命周期等信息

[>>YFW\(佑风微\)](#)