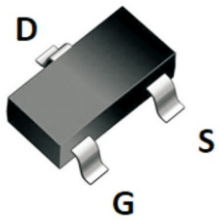
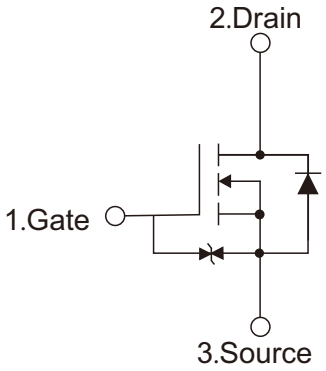
2N7002AK
0.3A 60V N-CHANNEL MOSFET

SOT-23





Features

- Fast Switching Capability
- Avalanche Energy Tested
- Low On Resistance
- Low Input Capacitance
- Small Surface Mount Package

Applications

- Motor Control
- Power Management Functions

Absolute Maximum Ratings (TA=25°C, unless otherwise specified)

Parameter	Symbols	Ratings	Units
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	0.3	A
Operation Junction Temperature And Storage Temperature	T_j, T_{stg}	-55 ~ +150	°C

Parameter		Symbols	Test Conditions	Min	Typ	Max	Units
Off Characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS} = 0V, I_D = 10uA	60			V
Drain-Source Leakage Current		I_{DSS}	V_{DS} = 60V, V_{GS} = 0V			1	uA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS} = 20V, V_{DS} = 0V			10	uA
	Reverse		V_{GS} = -20V, V_{DS} = 0V			-10	
On Characteristics							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS} = V_{GS}, I_D = 250uA	1.0	1.5	2.5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS} = 10V, I_D = 0.3A		1.6	2.5	Ω
			V_{GS} = 4.5V, I_D = 0.2A		1.9	3.0	Ω
HBM		ESD	V_{DS} = 10V, I_D = 0.115A	2.0			KV

Dynamic Characteristics

Input Capacitance	C_{ISS}	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz		23		pF
Output Capacitance	C_{OSS}			3.4		pF
Reverse Transfer Capacitance	C_{RSS}			1.4		pF
Switching Characteristics						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} =30V,I_D=3A,R_L=150Ω V_{GEN} = 10,R_{GEN} = 25Ω		10		ns
Turn-Off Delay Time	$t_{D(OFF)}$			33		ns

Typical Characteristics

Fig.1 Typical Output Characteristic

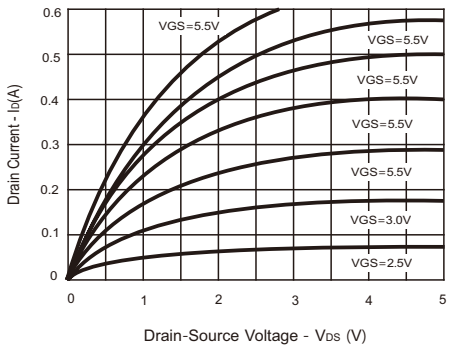


Fig.2 Typical Transfer Charactersitics

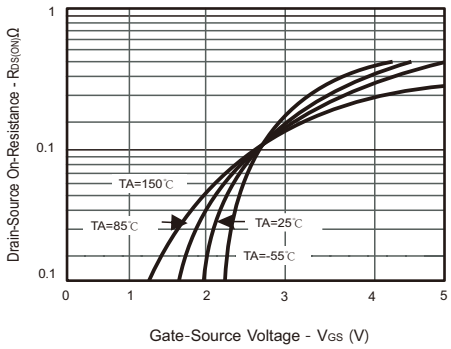


Fig.3 On-Resistance vs.Drain Current & Gate Voltage

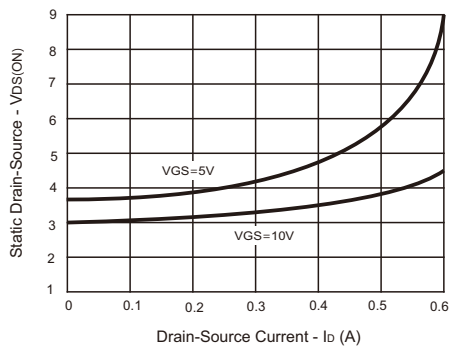


Fig.4 Normalized Static Drain-Source On-Resistance

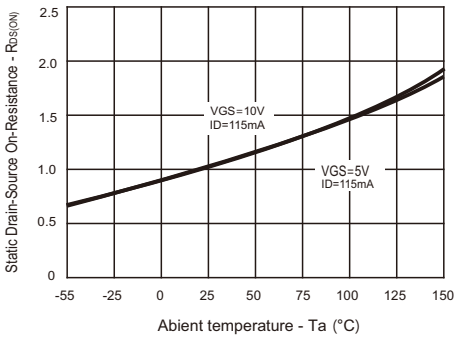


Fig.5 Gate Threshold Variation vs.Ambient Temperature

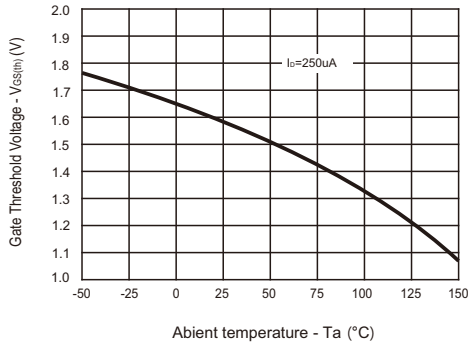


Fig.6 Typical Total Capacitance

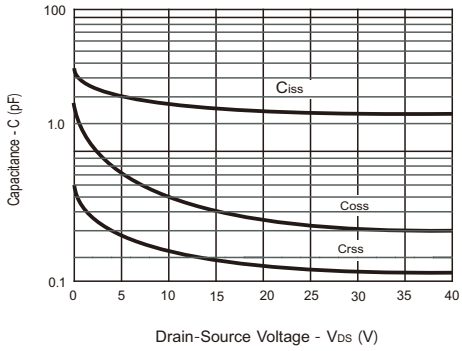
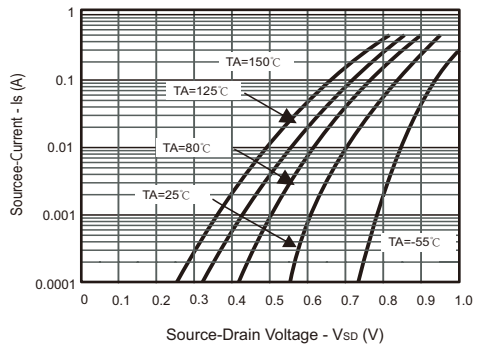
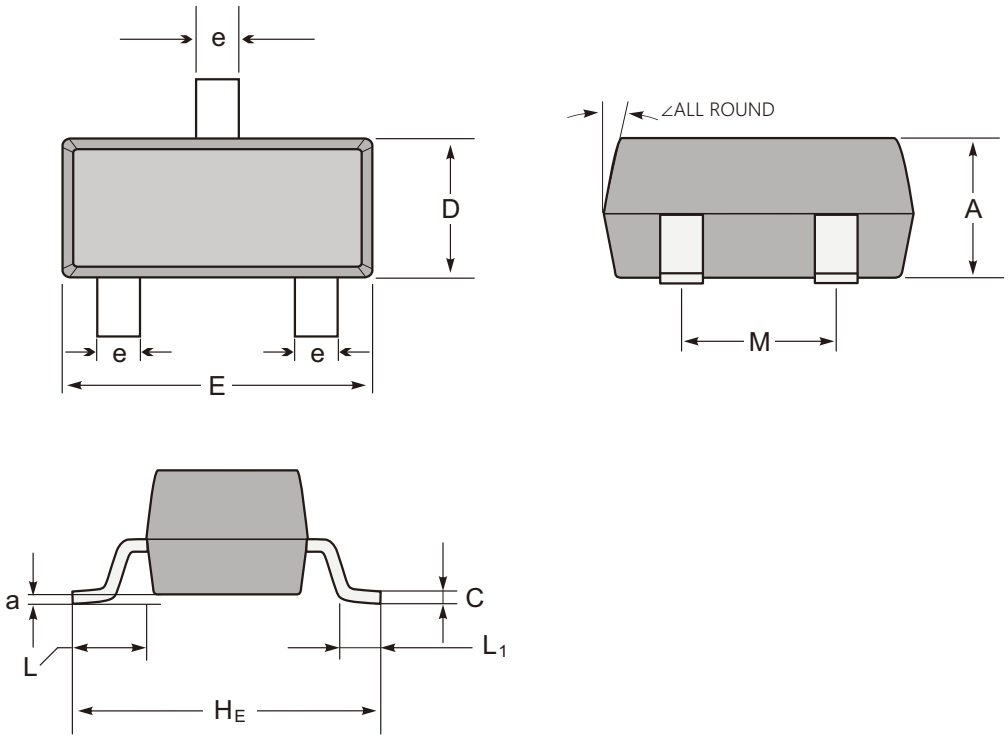


Fig.7 Reverse Dain Current vs.Source-Drain Voltage



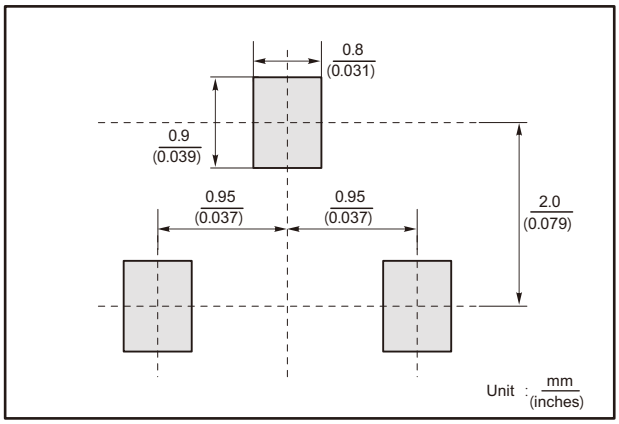
SOT-23 Package Outline Dimensions



SOT-23 mechanical data

UNIT		A	C	D	E	HE	e	M	L	L1	a	∠
mm	max	1.1	0.20	1.4	3.0	2.6	0.6	1.95	0.55 (ref)	0.36 (ref)	0.15	12°
	min	0.9	0.08	1.2	2.8	2.2	0.35	1.7			0.0	
mil	max	43	7.9	55	118	102	24	77	22 (ref)	14 (ref)	6	
	min	35	3.1	47	110	87	13	67			0.0	

The recommended mounting pad size



Marking

Type number	Marking code
2N7002AK	72AK

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