

SOT-23 Plastic-Encapsulate MOSFETS

CJ502K P-CHANNEL MOSFET

DESCRIPTION

These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry.

FEATURE

- Energy efficient
- Miniature surface mount package saves board space
- With protection diode between gate and source
- Very fast switching

APPLICATION

- DC-DC converters, power management in portable and battery-powered products such as computers, printers, cellular and cordless telephones.
- Relay driver
- High-speed line driver
- High-side load switch
- Switching circuits

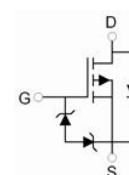
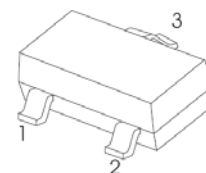
MARKING: 502K

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-50	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (note 1)	I_D	-0.18	A
Pulsed Drain Current @ $t_p < 10 \mu\text{s}$	I_{DM}	-0.7	A
Power Dissipation (note 2)	P_D	350	mW
Power Dissipation (note 1)		420	mW
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
Thermal Resistance from Junction to Ambient (note 1)		298	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}\text{C}$
Maximum Lead Temperature for Soldering Purposes , Duration for 5 Seconds	T_L	260	$^{\circ}\text{C}$

1. Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for drain 1 cm^2
2. Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Electrical characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-50			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -50V, V_{GS} = 0V$			-15	μA
		$V_{DS} = -25V, V_{GS} = 0V$			-0.1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 10	μA
Gate threshold voltage (note 1)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.9		-2	V
Drain-source on-resistance (note1)	$R_{DS(on)}$	$V_{GS} = -5V, I_D = -0.1A$			10	Ω
		$V_{GS} = -10V, I_D = -0.1A$			8	Ω
Forward transconductance (note 1)	g_{FS}	$V_{DS} = -25V; I_D = -100mA$	50			mS
DYNAMIC CHARACTERISTICS (note 2)						
Input capacitance	C_{iss}	$V_{DS} = -5V, V_{GS} = 0V, f = 1MHz$		30		pF
Output capacitance	C_{oss}			10		pF
Reverse transfer capacitance	C_{rss}			5		pF
SWITCHING CHARACTERISTICS (note 2)						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V,$ $R_L = 50\Omega, I_D = -2.5A$		2.5		ns
Turn-on rise time	t_r			1		ns
Turn-off delay time	$t_{d(off)}$			16		ns
Turn-off fall time	t_f			8		ns
SOURCE-DRAIN DIODE CHARACTERISTICS						
Continuous current	I_S				-0.18	A
Pulsed current	I_{SM}				-0.7	A
Diode forward voltage (note 1)	V_{DS}	$I_S = -0.13A, V_{GS} = 0V$			-2.2	V

Notes :

1. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
2. Guaranteed by design, not subject to producing.