



SOT-23 Plastic-Encapsulate MOSFETS

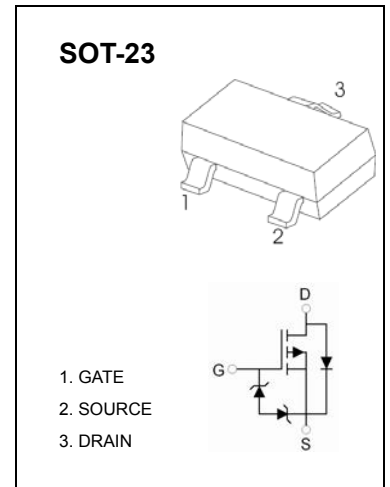
CJ502K P-CHANNEL MOSFET

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	$^{\circ}\text{C}/\text{W}$
Thermal Resistance from Junction to Ambient (note 1)		298	$^{\circ}\text{C}/\text{W}$
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.

Electrical characteristics (T_a=25°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 = -250μA	-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} = ±20V, V _{DS} = 0V			±10	μA
Gate threshold voltage (note 1)	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-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 = 50Ω, 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 ≤ 300μs, Duty Cycle ≤ 2%.
2. Guaranteed by design, not subject to producing.