DATA SHEET

MOS FIELD EFFECT TRANSISTOR 2SJ357

P-CHANNEL MOS FET FOR HIGH-SPEED SWITCH

The 2SJ357 is a P-channel vertical MOS FET that can be used as a switching element. The 2SJ357 can be directly driven by an IC operating at 5 V.

The 2SJ357 features a low on-resistance and excellent switching characteristics, and is suitable for applications such as actuator driver and DC/DC converter.

FEATURES

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New-type compact package

Has advantages of packages for small signals and for power transistors, and compensates those disadvantages

- Can be directly driven by an IC operating at 5 V.
 - Low on-resistance $R_{DS(ON)} = 0.35 \ \Omega \text{ MAX.} \ @V_{GS} = -4 \text{ V}, \text{ Id} = -1.5 \text{ A}$ $R_{DS(ON)} = 0.20 \ \Omega \text{ MAX.} \ @V_{GS} = -10 \text{ V}, \text{ Id} = -1.5 \text{ A}$

QUALITY GRADE

Standard

Package Drawings (unit: mm)



Equivalent Circuit



Please refer to "Quality Grades on NEC Semiconductor Devices" (Document No. C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

Parameter	Symbol	Conditions	Ratings	Unit
Drain-Source Voltage	Vdss	V _{GS} = 0	-30	V
Gate-Source Voltage	Vgss	V _{DS} = 0	-20/+10	V
Drain Current (DC)	ID(DC)		-/+3.0	А
Drain Current (Pulse)	D(pulse)	$PW \le 10 \text{ ms}$ Duty Cycle $\le 1 \%$	-/+6.0	A
Total Power Loss	Рт	Mounted on ceramic board of 7.5 $\text{cm}^2 \times 0.7 \text{ mm}$	2.0	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS (TA = +25 °C)

The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device is actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

The information in this document is subject to change without notice.

ELECTRICAL SPECIFICATIONS (TA = +25 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Drain Shut-down Current	IDSS	$V_{DS} = -30 V, V_{GS} = 0$			-10	μΑ
Gate Leak Current	lgss	$V_{GS} = -16/+10 V, V_{DS} = 0$			-/+10	μΑ
Gate Cutoff Voltage	VGS(off)	$V_{DS} = -10 V, I_{D} = -1 mA$	-1.0	-1.5	-2.0	V
Forward Transfer Admittance	y _{fs}	VDS = -10 V, ID = -1.0 A	1.8			S
Drain-Source On-Resistance	RDS(on)1	Vgs = -4 V, Id = -1.5 A		0.23	0.35	Ω
Drain-Source On-Resistance	RDS(on)2	Vgs = -10 V, Id = -1.5 A		0.12	0.20	Ω
Input Capacitance	Ciss	V _{DS} = -10 V, V _{GS} = 0, f = 1.0 MHz		645		pF
Output Capacitance	Coss			500		pF
Feedback Capacitance	Crss			275		pF
On-Time Delay	td(on)	$V_{DD} = -25 \text{ V, } \text{ID} = -1.5 \text{ A}$ $V_{GS(on)} = -10 \text{ V}$ $R_{G} = 10 \Omega, R_{L} = 17 \Omega$		8		ns
Rise Time	tr			42		ns
Off-Time Delay	td(off)			145		ns
Fall Time	tr			170		ns
Gate Input Charge	QG	$V_{DS} = -24 V,$ $V_{GS} = -10 V,$ $I_D = -3.1 A, I_G = -2 mA$		25.1		nC
Gate-Source Chanrge	QGS			2.0		nC
Gate-Drain Charge	Qgd			9.8		nC
Internal Diode Reverse Recovery Time	trr	IF = 3.0 A di/dt = 50 A/μs		112		ns
Internal Diode Reverse Recovery Charge	Qrr			106		nC

CHARACTERISTICS CURVES (TA = +25 °C)



FORWARD BIAS SAFE OPERATING AREA





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- Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots
- Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)
- Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

Anti-radioactive design is not implemented in this product.