TY Semicondutor® TY

2SJ557

DESCRIPTION

The 2SJ557 is a switching device which can be driven directly by a 4 V power source.

The 2SJ557 features a low on-state resistance and excellent switching characteristics, and is suitable for applications such as power switch of portable machine and so on.

FEATURES

- Can be driven by a 4 V power source
- Low on-state resistance

  $R_{DS(on)1}$ = 155 mΩ MAX. (V_{GS} = −10 V, I_D = −1.0 A)

  $R_{DS(on)2}$ = 255 mΩ MAX. (V_{GS} = −4.5 V, I_D = −1.0 A)

  $R_{DS(on)3}$ = 290 mΩ MAX. (V_{GS} = −4.0 V, I_D = −1.0 A)

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SJ557	3-pin Mini Mold (Thin Type)

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage	V_{DSS}	−30	V
Gate to Source Voltage	V_{GSS}	−20 / +5	V
Drain Current (DC)	$I_{D(DC)}$	±2.5	A
Drain Current (pulse) **Note1**	$I_{D(pulse)}$	±10	A
Total Power Dissipation	P_{T1}	0.2	W
Total Power Dissipation **Note2**	P_{T2}	1.25	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	−55 to +150	°C

Notes 1. PW ≤ 10 μs, Duty Cycle ≤ 1 %

2. Mounted on FR4 Board, t ≤ 5 sec.

PACKAGE DRAWING (Unit : mm)
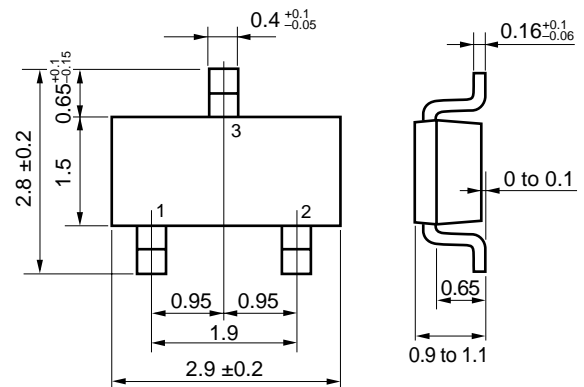

1 : Gate
2 : Source
3 : Drain

EQUIVALENT CIRCUIT

Marking: XB

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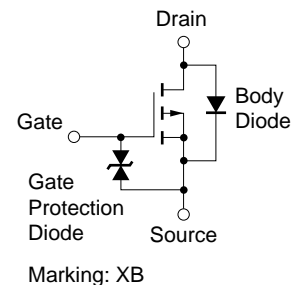
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ELECTRICAL CHARACTERISTICS (T$_A$ = 25 °C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-off Current	I$_{DSS}$	V$_{DS}$ = −30 V, V$_{GS}$ = 0 V			−10	μA
Gate Leakage Current	I$_{GSS}$	V$_{GS}$ = ±16 V, V$_{DS}$ = 0 V			±10	μA
Gate Cut-off Voltage	V$_{GS(off)}$	V$_{DS}$ = −10 V, I$_D$ = −1 mA	−1.0	−1.7	−2.5	V
Forward Transfer Admittance	| y$_{fs}$ |	V$_{DS}$ = −10 V, I$_D$ = −1.5 A	1	2.5		S
Drain to Source On-state Resistance	R$_{DS(on)1}$	V$_{GS}$ = −10 V, I$_D$ = −1.0 A		114	155	mΩ
	R$_{DS(on)2}$	V$_{GS}$ = −4.5 V, I$_D$ = −1.0 A		178	255	mΩ
	R$_{DS(on)3}$	V$_{GS}$ = −4.0 V, I$_D$ = −1.0 A		212	290	mΩ
Input Capacitance	C$_{iss}$	V$_{DS}$ = −10 V		312		pF
Output Capacitance	C$_{oss}$	V$_{GS}$ = 0 V		117		pF
Reverse Transfer Capacitance	C$_{rss}$	f = 1 MHz		56		pF
Turn-on Delay Time	t$_{d(on)}$	V$_{DD}$ = −10 V		12		ns
Rise Time	t$_r$	I$_D$ = −1.0 A		7		ns
Turn-off Delay Time	t$_{d(off)}$	V$_{GS(on)}$ = −10 V		133		ns
Fall Time	t$_f$	R$_G$ = 10 Ω		85		ns
Total Gate Charge	Q$_G$	V$_{DD}$= −10 V		2.8		nC
Gate to Source Charge	Q$_{GS}$	I$_D$ = −2.5 A		1.0		nC
Gate to Drain Charge	Q$_{GD}$	V$_{GS}$ = −4.0 V		1.2		nC
Diode Forward Voltage	V$_{F(S-D)}$	I$_F$ = 2.5 A, V$_{GS}$ = 0 V		0.84		V
Reverse Recovery Time	t$_{rr}$	I$_F$ = 2.5 A, V$_{GS}$ = 0 V		28		ns
Reverse Recovery Charge	Q$_{rr}$	di/dt = 50 A / μs		7.8		nC

TEST CIRCUIT 1 SWITCHING TIME
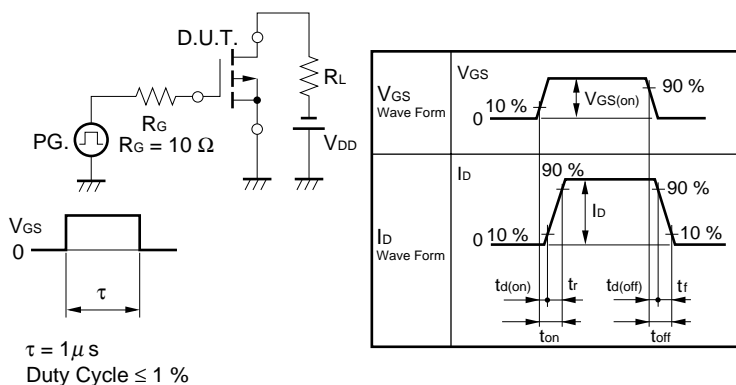
TEST CIRCUIT 2 GATE CHARGE

τ = 1μ s
Duty Cycle $\leq$ 1 %