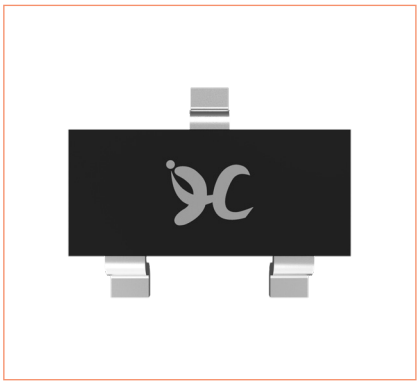
宏 迦 橙
www.ichjc.com

2N7002W

N-CHANNEL MOSFET

SOT-323



Features

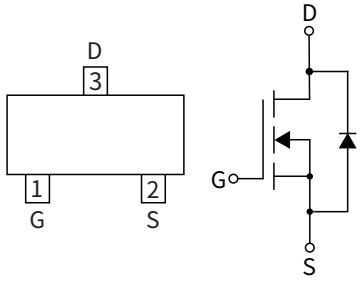
- V_{DS}=60V
- I_D=340mA
- $R_{DS(on)}$@VGS=10V ＜ 2.5Ω
- $R_{DS(on)}$@VGS=4.5V ＜ 3.0Ω
- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Fast Switching Speed

Applications

- Battery operated systems
- Solid-state relays
- Direct logic-level interface：TTL/CMOS

Mechanical Data

- Case: SOT-323
  Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026



Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER		SYMBOL	UNIT	VALUE
Drain-source Voltage		V_{DS}	V	60
Gate-source Voltage		V_{GS}	V	±30
Drain Current	T_A=25°C @ Steady State	I_D	mA	340
	T_A=70°C @ Steady State			272
Pulsed Drain Current (1)		I_{DM}	A	1.5
Total Power Dissipation @ T_A=25°C		P_D	mW	150
Thermal Resistance Junction-to-Ambient @ Steady State (2)		$R_{\theta JA}$	°C / W	833
Junction and Storage Temperature Range		T_J,T_{STG}	°C	-55 ~+150

Note :

(1)Pulse test ; Pulse width ≤ 300us, duty cycle ≤ 2%

(2)Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-323	R1	0.008	3000	30000	120000	7''

Static Parameter Characteristics (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	V	60	—	—
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	μA	—	—	1
Gate-Body Leakage Current	I_{GSS1}	V_{GS}= ±30V, V_{DS}=0V	nA	—	—	±100
	I_{GSS2}	V_{GS}= ±20V, V_{DS}=0V	nA	—	—	±50
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	V	1	1.6	2.5
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=300mA	Ω	—	1.2	2.5
		V_{GS}= 4.5V, I_D=200mA		—	1.3	3.0
Forward Transconductance	gfs	V_{DS}=10 V, I_D=200mA	ms	80	—	—
Diode Forward Voltage	V_{SD}	I_S=300mA,V_{GS}=0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	mA	—	—	340

Dynamic Parameters (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHZ	pF	—	27.5	—
Output Capacitance	C_{oss}			—	2.75	—
Reverse Transfer Capacitance	C_{rss}			—	1.9	—

Switching Parameters (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=30V,I_D=0.3A	nC	—	1.6	—
Gate-Source Charge	Q_{gs}			—	0.47	—
Gate-Drain Charge	Q_{gd}			—	0.25	—
Reverse Recovery Charge	Q_{rr}	I_F=0.3A, di/dt=-100A/μs		—	2.5	—
Reverse Recovery Time	t_{rr}		ns	—	11.5	—
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=30V, I_D=300mA, R_{GEN}=6Ω		—	3.3	—
Turn-on Rise Time	t_r			—	19	—
Turn-off Delay Time	$t_{D(off)}$			—	9.6	—
Turn-off fall Time	t_f			—	49	—

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

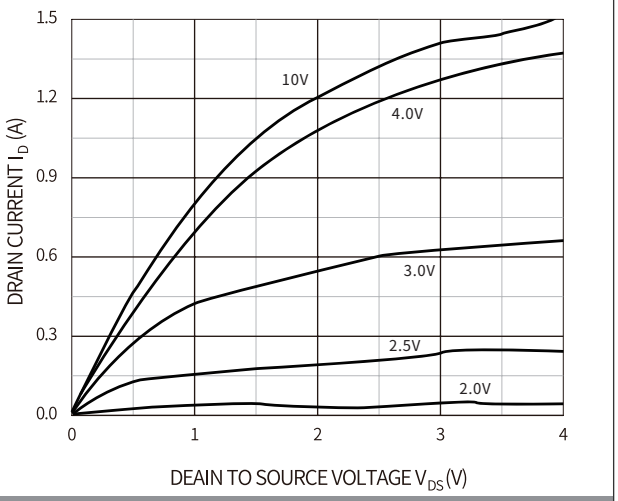


Fig.1 Output Characteristics

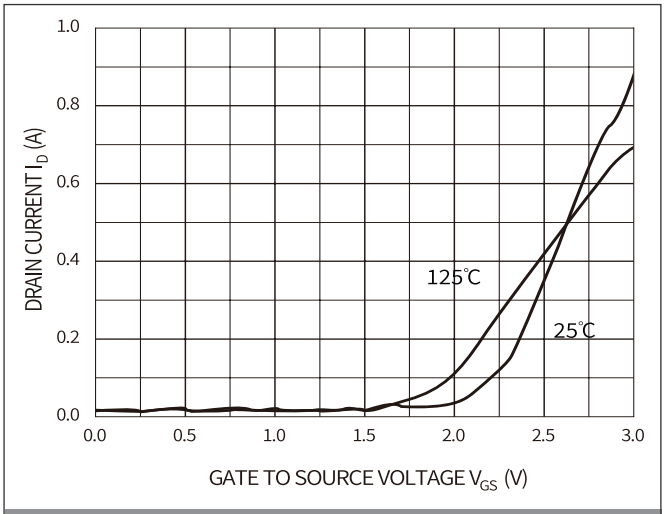


Fig.2 Transfer Characteristics

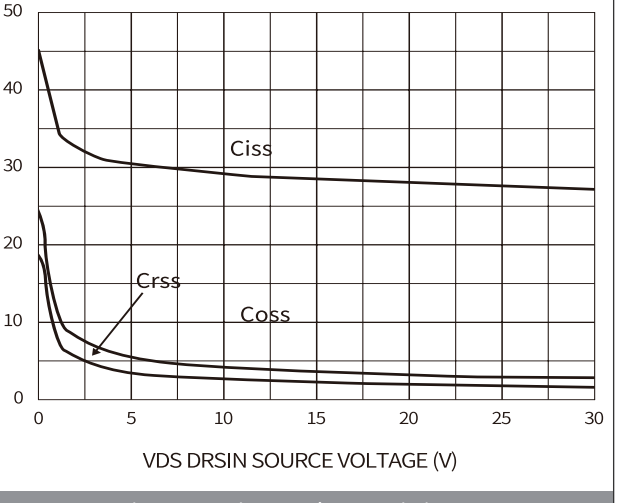


Fig.3 Capacitance Characteristics

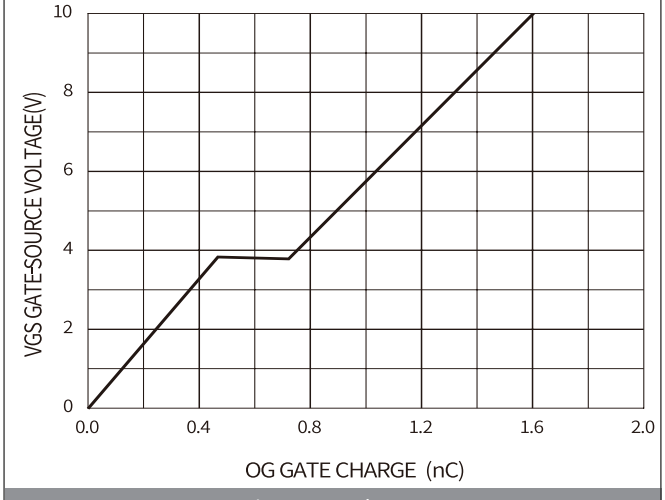


Fig.4 Gate Charge

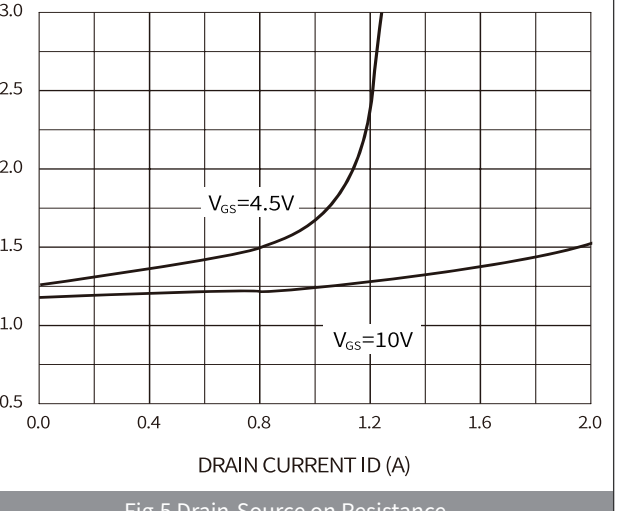
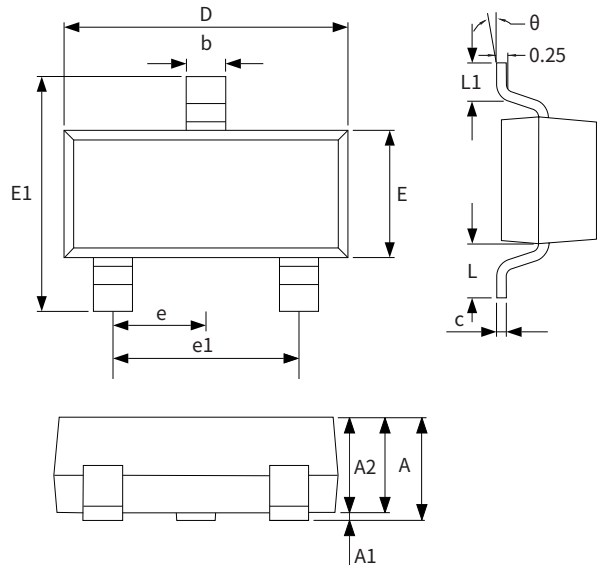


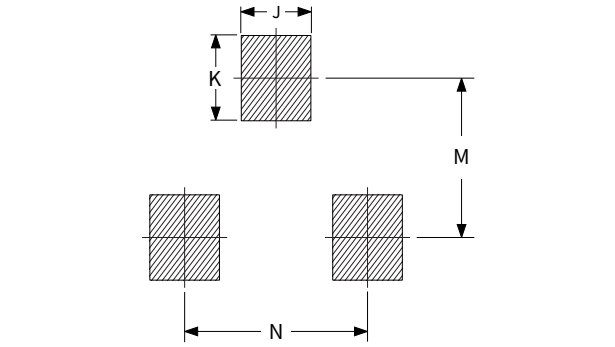
Fig.5 Drain-Source on Resistance

Package Outline Dimensions (SOT-323)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	-	0.10	-	0.004
A2	0.90	1.00	0.035	0.039
b	0.15	0.40	0.006	0.016
c	0.10	0.25	0.004	0.010
D	1.80	2.20	0.071	0.087
E	1.15	1.35	0.045	0.053
E1	2.15	2.45	0.085	0.096
e	0.650TYP		0.026TYP	
e1	1.20	1.40	0.047	0.055
L	0.525REF		0.021REF	
L1	0.26	0.46	0.010	0.018
θ	-	8°	-	8°

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.70	-	0.027	-
K	-	0.90	-	0.035
M	1.90	-	0.074	-
N	-	1.30	-	0.050