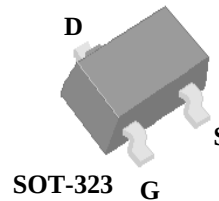
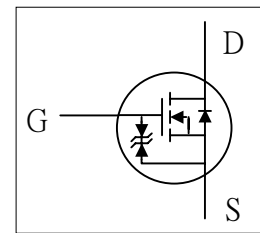




- ▼ Simple Drive Requirement
- ▼ Small Package Outline
- ▼ Surface Mount Device
- ▼ RoHS Compliant & Halogen-Free



BV_{DSS}	60V
$R_{DS(ON)}$	2Ω
I_D	270mA



Description

AP2N7002 series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The SOT-323 package is widely used for all commercial-industrial applications.

Absolute Maximum Ratings@ $T_J=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Drain Current ³ , V_{GS} @ 10V	270	mA
$I_D@T_A=70^\circ\text{C}$	Drain Current ³ , V_{GS} @ 10V	210	mA
I_{DM}	Pulsed Drain Current ¹	800	mA
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation ³	0.31	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Unit
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	400	$^\circ\text{C}/\text{W}$

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =450mA	-	-	2	Ω
		V _{GS} =4.5V, I _D =200mA	-	-	4	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	2.5	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =450mA	-	600	-	mS
I _{DSS}	Drain-Source Leakage Current	V _{DS} =48V, V _{GS} =0V	-	-	25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±30	uA
Q _g	Total Gate Charge	I _D =200mA	-	1.1	1.8	nC
Q _{gs}	Gate-Source Charge	V _{DS} =48V	-	0.3	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	0.5	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =30V	-	11	-	ns
t _r	Rise Time	I _D =450mA	-	9	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	64	-	ns
t _f	Fall Time	V _{GS} =10V	-	30	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	39	62	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	12	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	5	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =450mA, V _{GS} =0V	-	-	1.2	V

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on min. copper pad of FR4 board.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

APEC DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

APEC RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN.

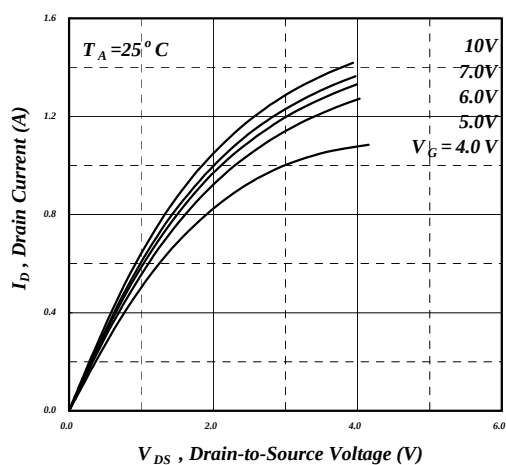


Fig 1. Typical Output Characteristics

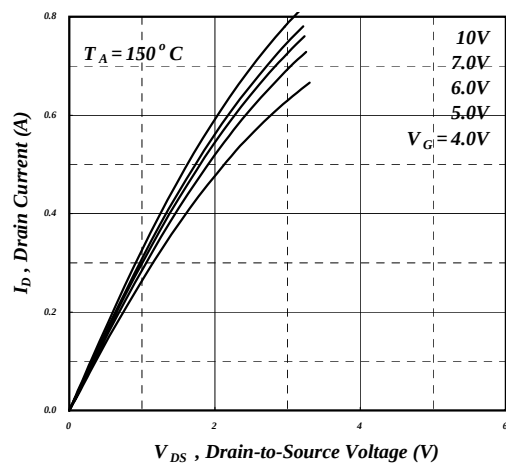


Fig 2. Typical Output Characteristics

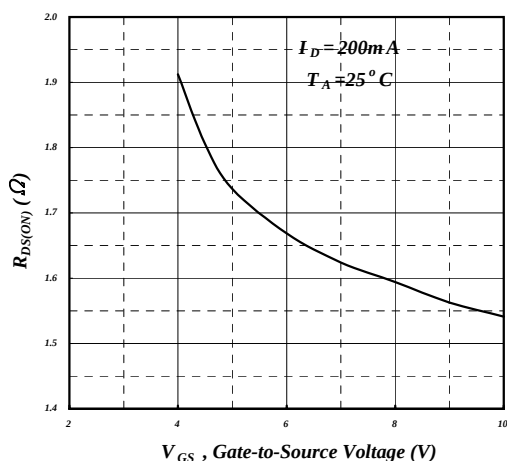


Fig 3. On-Resistance v.s. Gate Voltage

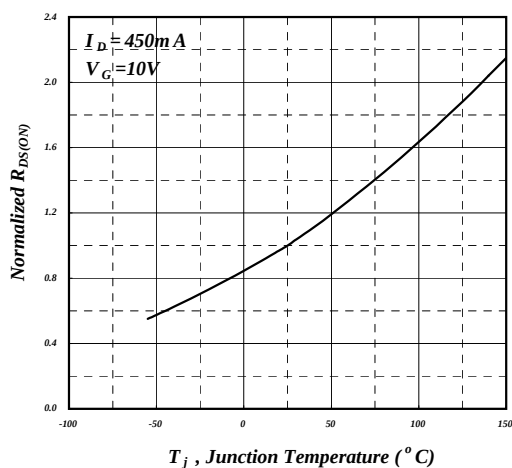


Fig 4. Normalized On-Resistance v.s. Junction Temperature

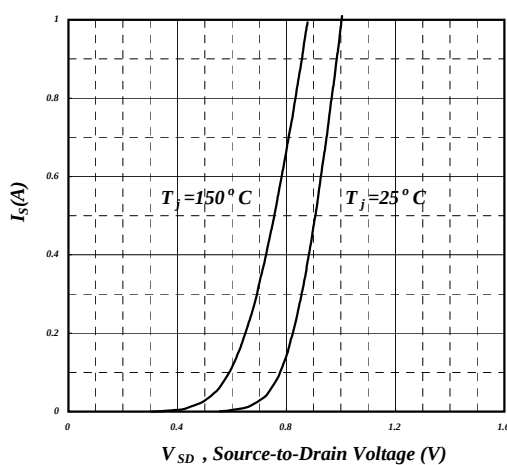


Fig 5. Forward Characteristic of Reverse Diode

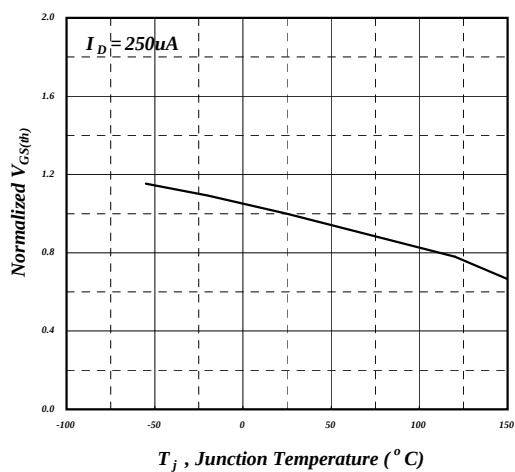


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

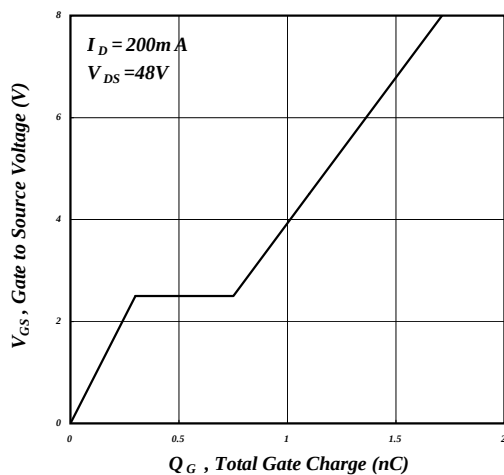


Fig 7. Gate Charge Characteristics

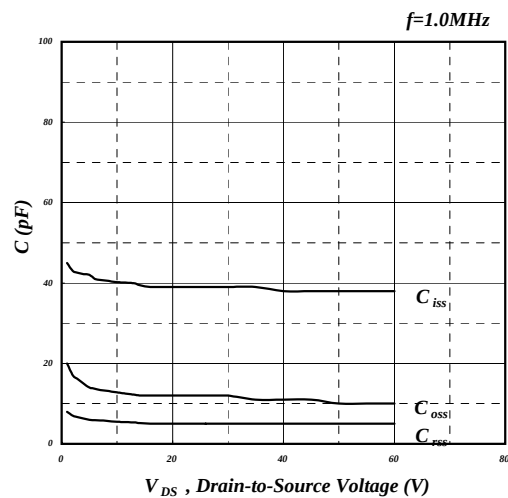


Fig 8. Typical Capacitance Characteristics

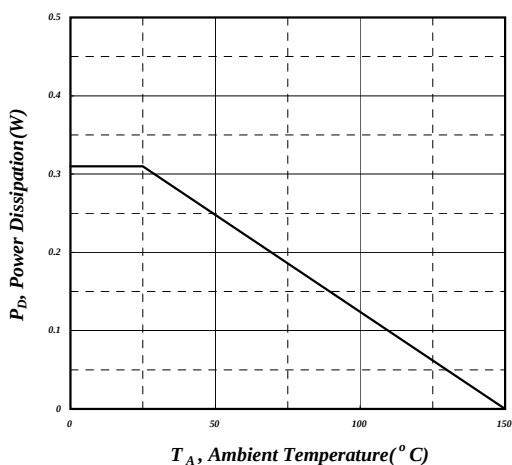


Fig 9. Total Power Dissipation

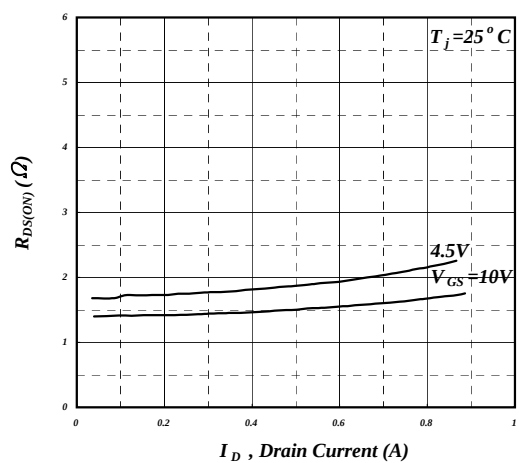


Fig 10. Typ. Drain-Source on State Resistance

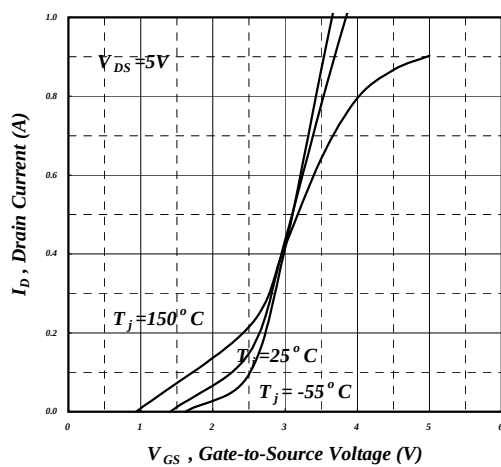


Fig 11. Transfer Characteristics

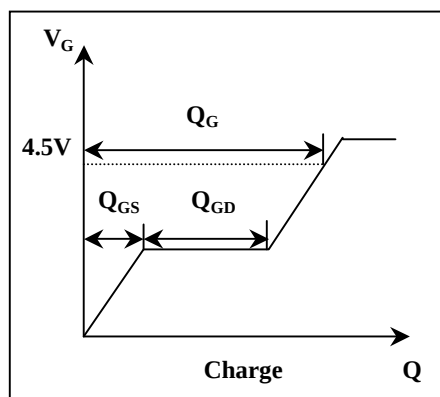
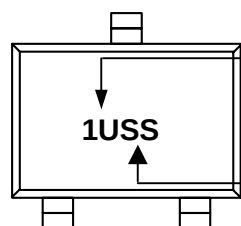


Fig 12. Gate Charge Waveform



MARKING INFORMATION



Part Number : 1U

Date Code : SS

SS:2004,2008,2012,2016,2020...

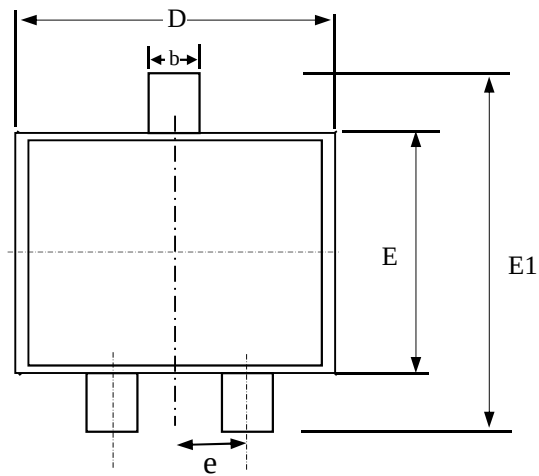
SS:2003,2007,2011,2015,2019...

SS:2002,2006,2010,2014,2018...

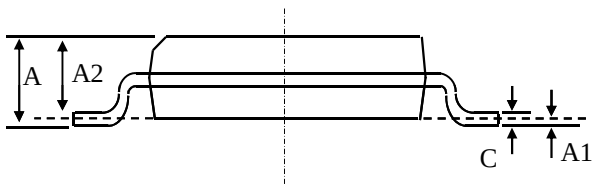
SS:2001,2005,2009,2013,2017...



Package Outline : SOT-323(SC-70-3L)



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	0.80	0.95	1.10
A1	0.00	0.05	0.10
A2	0.80	0.90	1.00
b	0.00	0.20	0.40
C	0.10	0.18	0.25
e	0.65 REF		
D	1.80	2.00	2.20
E1	1.75	2.10	2.45
E	1.15	1.25	1.35



- 1.All Dimension Are In Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.



SOLDER PAD LAYOUT GUIDE

