

SI1013X

S-SI1013X

P-Channel 1.8-V (G-S) MOSFET

1. FEATURES

- Fast Switching Speed: 14 ns
- High-Side Switching
- Gate to Source ESD Protected:2000V
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.

2. APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Paggers

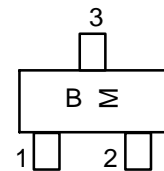
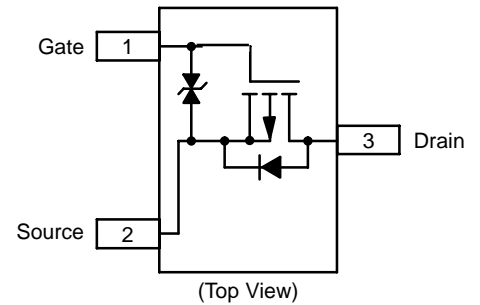
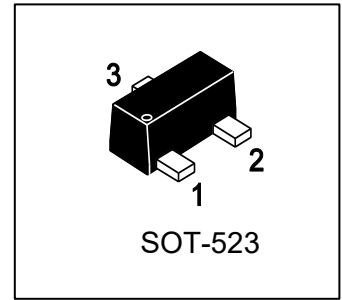
3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
SI1013X	B	3000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25°C)

Parameter	Symbol	5 secs	Steady State	Unit	
Drain-to-Source Voltage	VDSS	-20		V	
Gate-to-Source Voltage	VGS	±6		V	
Continuous Drain Current (Note 1)	ID	TA = 25°C	-400	-350	mA
		TA = 85°C	-300	-275	
Pulsed Drain Current (Note 1)	IDM	-1000			
Continuous Source Current	IS	-275	-250		
Power Dissipation (Note 2)	PD	TA = 25°C	275	250	mW
		TA = 85°C	160	140	
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150		°C	
Gate-Source ESD Rating (HBM, Method 3015)	ESD	2000		V	

- 1.Pulse width limited by maximum junction temperature.
- 2.Surface Mounted on FR4 Board.



B = Specific Device Code
M = Month Code



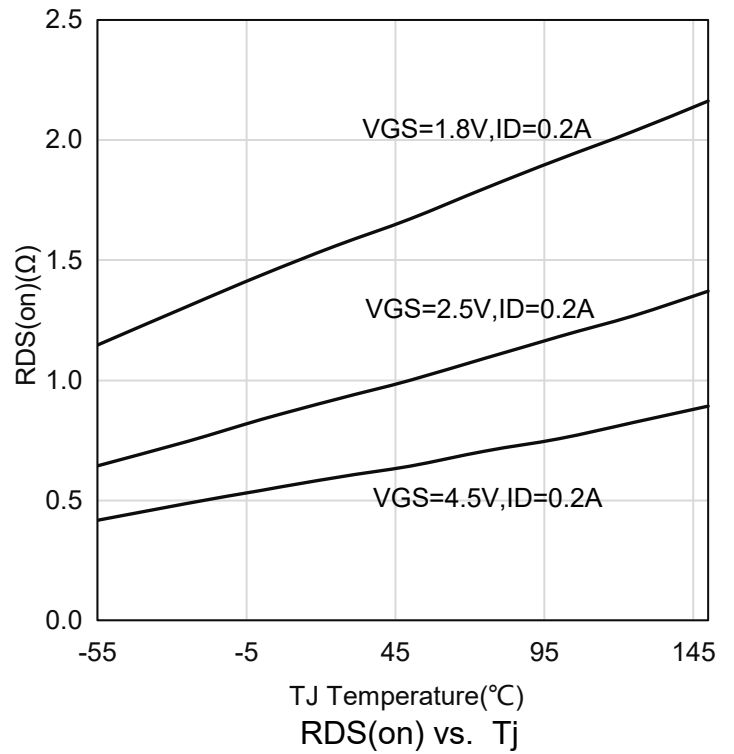
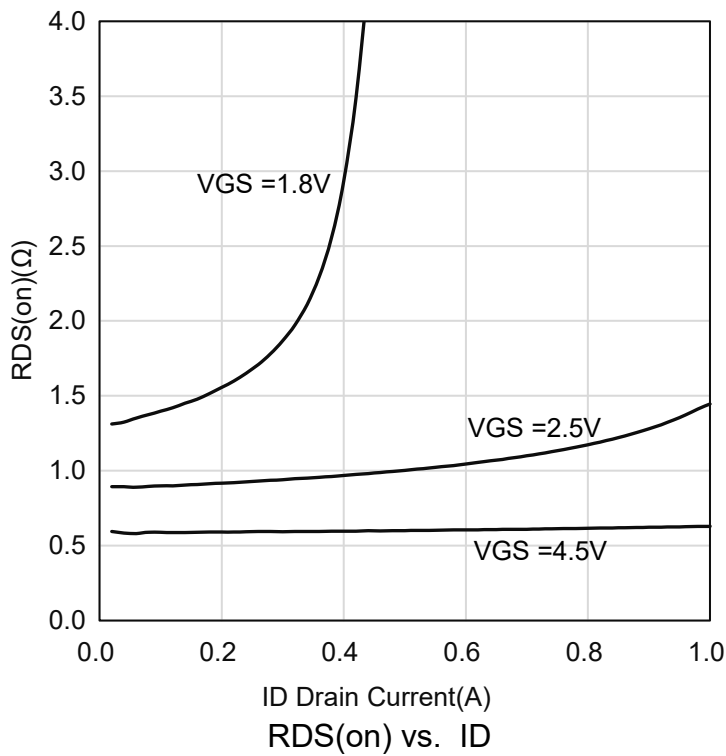
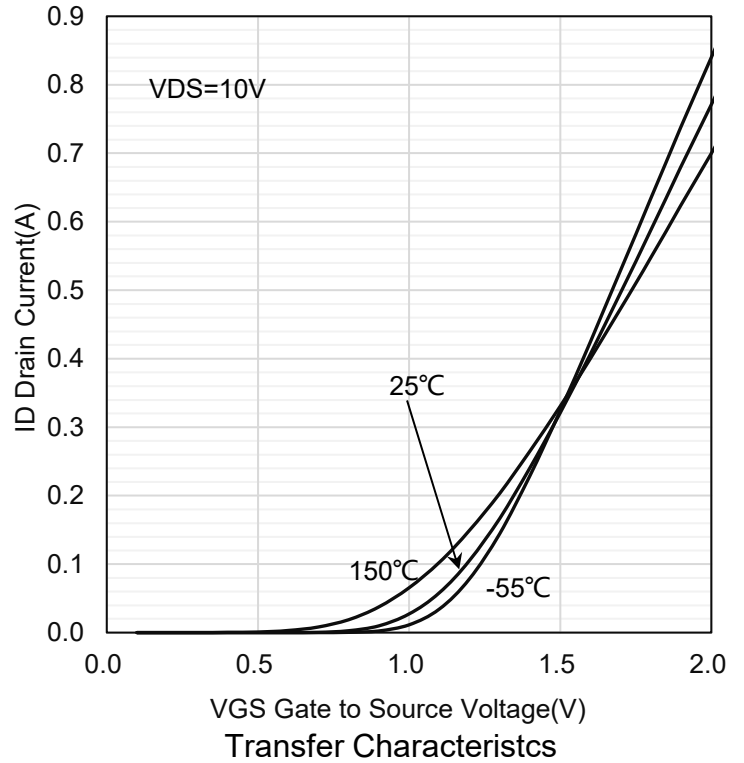
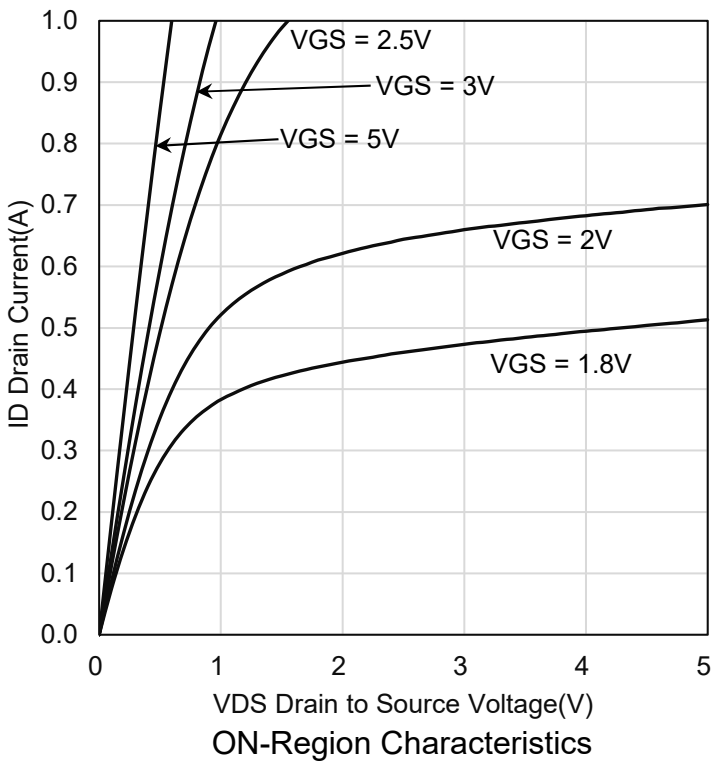
5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

Characteristic	Symbol	Min.	Typ.	Max.	Unit	
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)	VBRDSS	-20	-	-	V	
Zero Gate Voltage Drain Current (VDS = -16 V, VGS = 0 V) (VDS = -16 V, VGS = 0 V, TJ = 85°C)	IDSS	-	-0.3	-100	nA μA	
Gate–to–Source Leakage Current (VDS = 0 V, VGS = ±4.5 V)	IGSS	-	±1	±2	μA	
Gate Threshold Voltage (VDS = VGS, ID = -250μA)	VGS(th)	-0.45	-	-1.3	V	
Drain–to–Source On Resistance (VGS = -4.5 V, ID = -350 mA) (VGS = -2.5 V, ID = -300 mA) (VGS = -1.8 V, ID = -10 mA)	RDS(on)	-	0.8 1.2 1.8	1.2 1.6 2.7	Ω	
Diode Forward Voltage (IS = -150 mA, VGS = 0 V)	VSD	-	-0.8	-1.2	V	
Total Gate Charge	(VDS=-10 V, VGS=-4.5 V, ID=-250 mA)	Qg	-	1500	-	pC
Gate-Source Charge			-	150	-	
Gate-Drain Charge			-	450	-	
Turn-On Delay Time	(VDD = -10 V, RL = 47 Ω, ID=-200 mA, VGEN = -4.5 V, RG = 10Ω)	td(ON)	-	5	-	ns
Rise Time		tr	-	9	-	
Turn-Off Delay Time		td(OFF)	-	35	-	
Fall Time		tf	-	11	-	

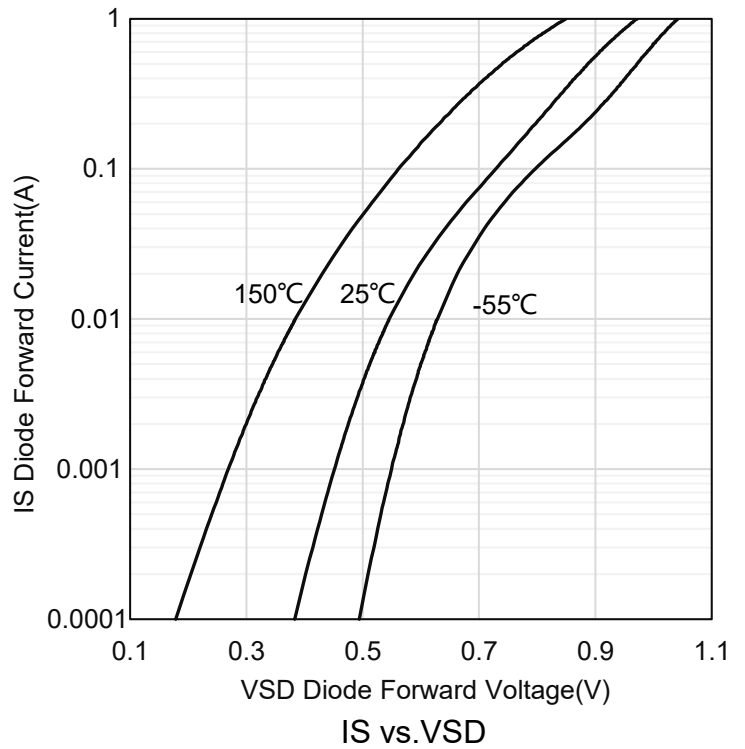
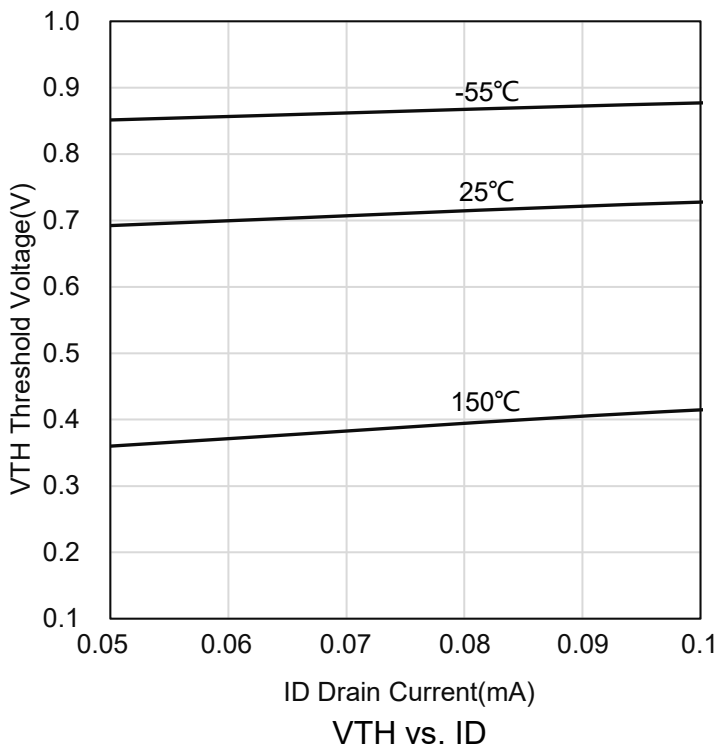
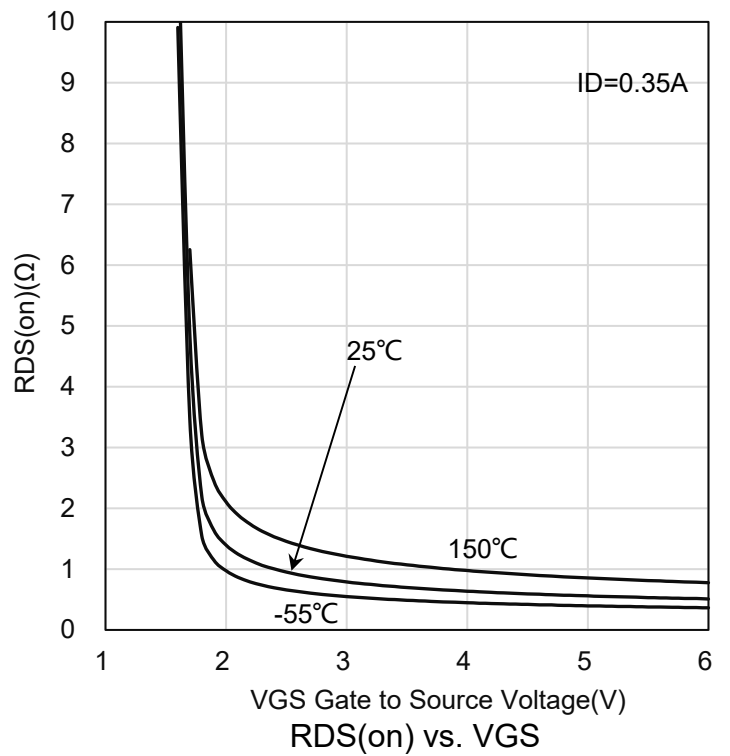
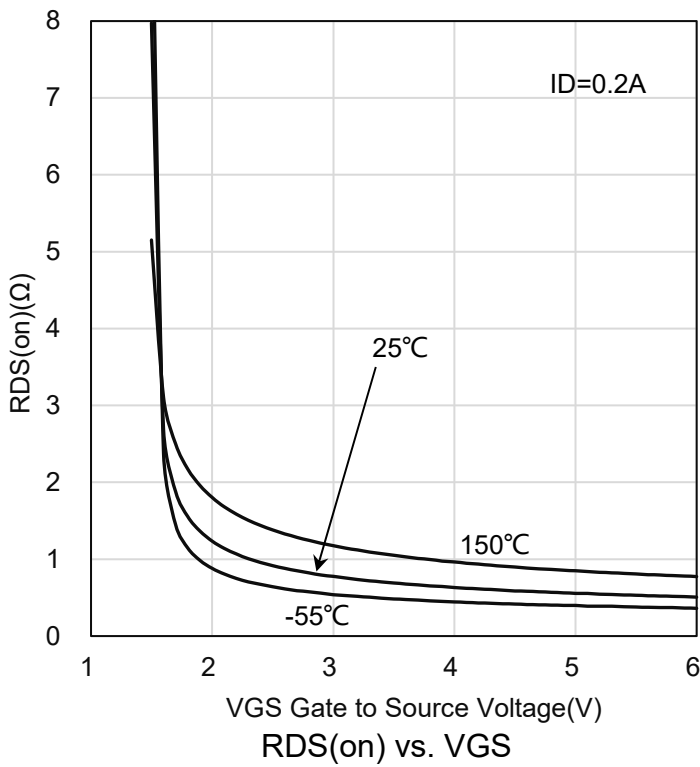
3. Pulse Test: pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.



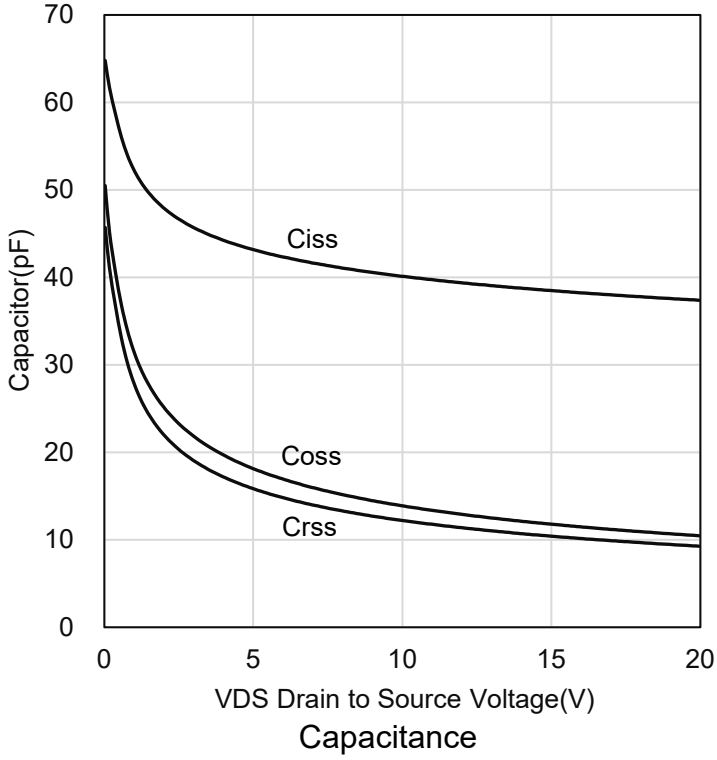
6. ELECTRICAL CHARACTERISTICS CURVES



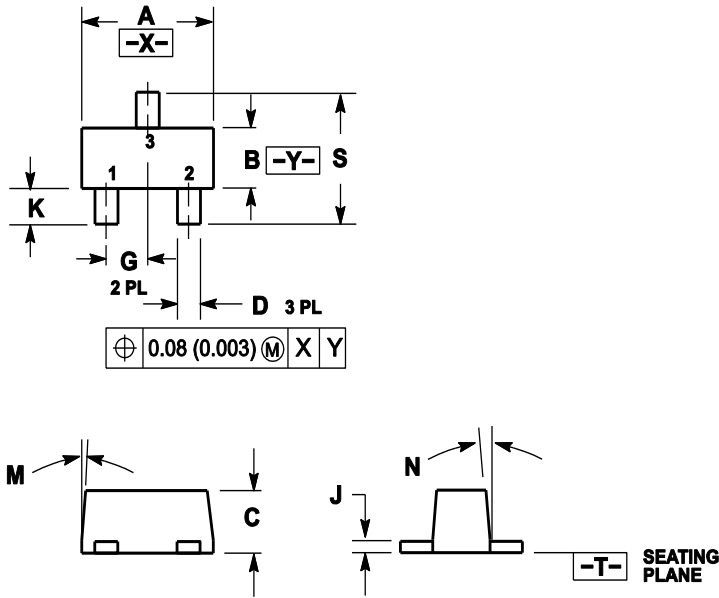
6.ELECTRICAL CHARACTERISTICS CURVES(Con.)



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7. OUTLINE AND DIMENSIONS



Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.60	1.70	0.059	0.063	0.067
B	0.75	0.85	0.95	0.030	0.034	0.040
C	0.60	0.70	0.80	0.024	0.028	0.031
D	0.23	0.28	0.33	0.009	0.011	0.013
G	0.50BSC			0.020BSC		
H	0.53REF			0.021REF		
J	0.10	0.15	0.20	0.004	0.006	0.008
K	0.30	0.40	0.50	0.012	0.016	0.02
L	1.10REF			0.043REF		
M	---	---	10°	---	---	10°
N	---	---	10°	---	---	10°
S	1.50	1.60	1.70	0.059	0.063	0.067

8. SOLDERING FOOTPRINT

