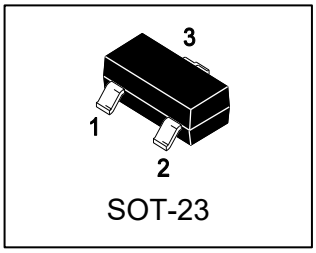
P4101

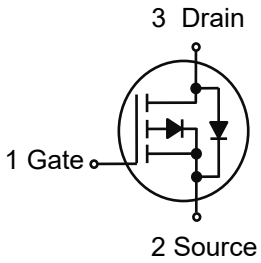
20V P-Channel Enhancement-Mode MOSFET



SOT-23

1. FEATURES

- Advanced trench process technology.
- High Density Cell Design For Ultra Low On-Resistance.
- Fully Characterized Avalanche Voltage and Current.
- Improved Shoot-Through FOM.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



2. APPLICATIONS

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
P4101	P41	3000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	-20	V
Gate–to–Source Voltage – Continuous	VGS	±8	V
Continuous Drain Current	ID	-2.3	A
Pulsed Drain Current(Note 1)	IDM	-8	A

5. THERMAL CHARACTERISTICS

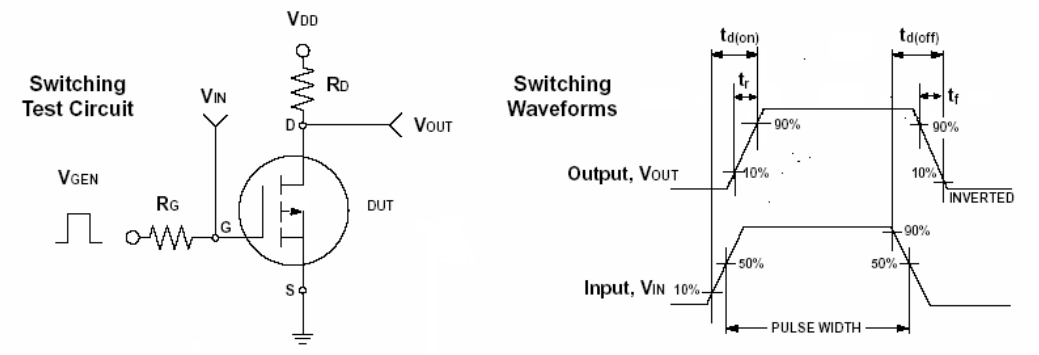
Parameter		Symbol	Limits	Unit
Maximum Power Dissipation	TA =25℃	PD	0.9	W
	TA =75℃		0.57	
Junction-to-Ambient Thermal Resistance		RΘJA	140	ºC/W
Operating, Junction and Storage temperature		TJ,Tstg	−55~+150	℃

1. Repetitive Rating: Pulse width limited by the Maximum junction temperation
2. The device mounted on 1in² FR4 board with 2 oz copper

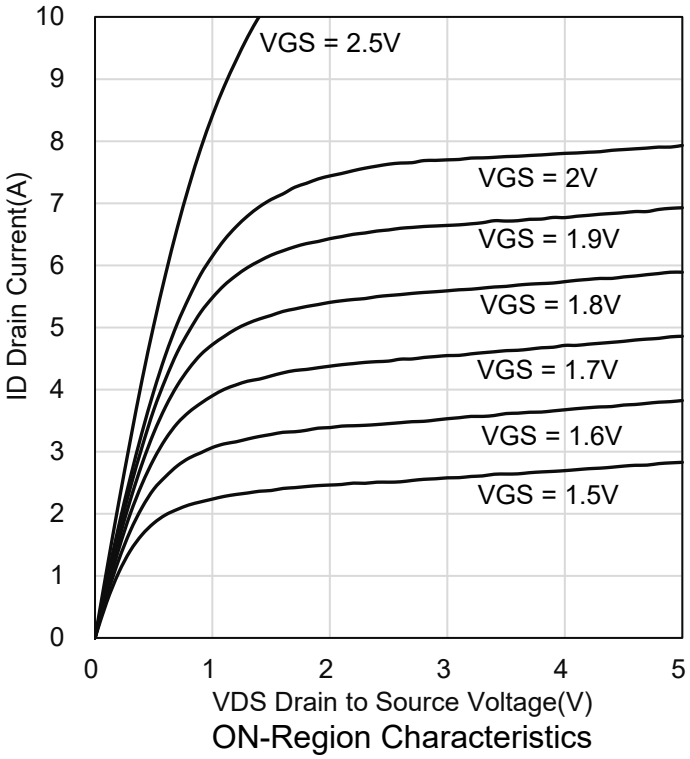
6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

Characteristic		Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)		V(BR)DSS	-20	-	-	V
Gate Threshold Voltage (VDS = VGS, ID = -250μA)		VGS(th)	-0.45	-	-0.95	V
Zero Gate Voltage Drain Current (VDS=-9.6V, VGS=0V)		IDSS	-	-	-1	μA
Gate–Body Leakage Current (VDS = 0 V, VGS = ±8 V)		IGSS	-	-	±100	nA
Static Drain–Source On–State Resistance (VGS = -4.5V, ID = -2.8A) (VGS = -2.5V, ID = -2.0A)		RDS(on)	- -	69 83	100 150	mΩ
Forward Voltage (IS = -0.75A, VGS = 0V)		VSD	-	-0.8	-1.2	V
Input Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -6 V)		Ciss	-	388	-	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -6 V)		Coss	-	53	-	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -6 V)		Crss	-	41	-	pF
Total Gate Charge	(VDS = -6V, ID = -2.8A,VGS = -4.5V)	Qg	-	15.23	-	nC
Gate-Source Charge		Qgs	-	5.49	-	
Gate-Drain Charge		Qgd	-	2.74	-	
Turn-On Delay Time	(VDD = -6V, VGEN = -4.5V,RL = 6 Ω ,RG = 6 Ω,ID = −1A)	td(on)	-	17.28	-	ns
Rise Time		tr	-	3.73	-	
Turn-Off Delay Time		td(off)	-	36.05	-	
Fall Time		tf	-	6.19	-	

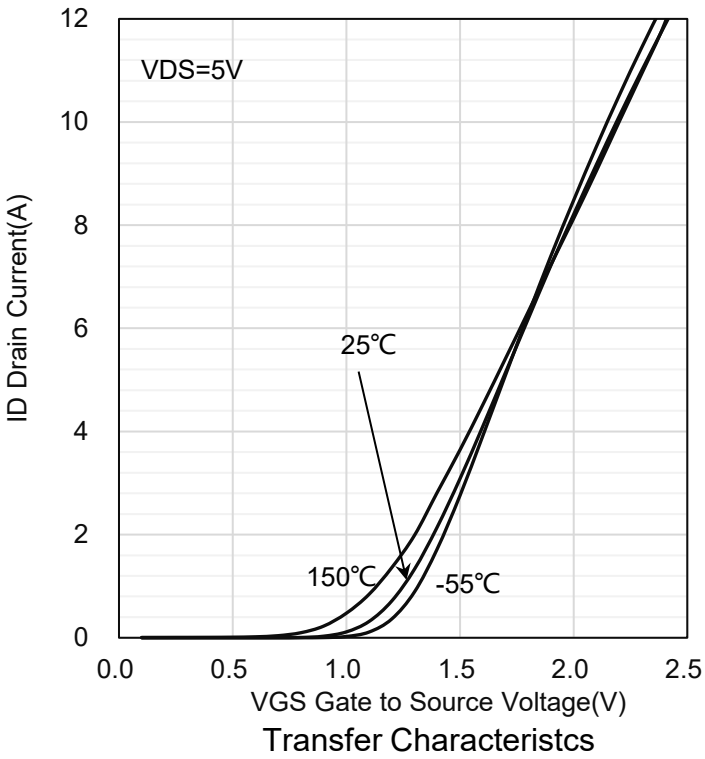
3.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.



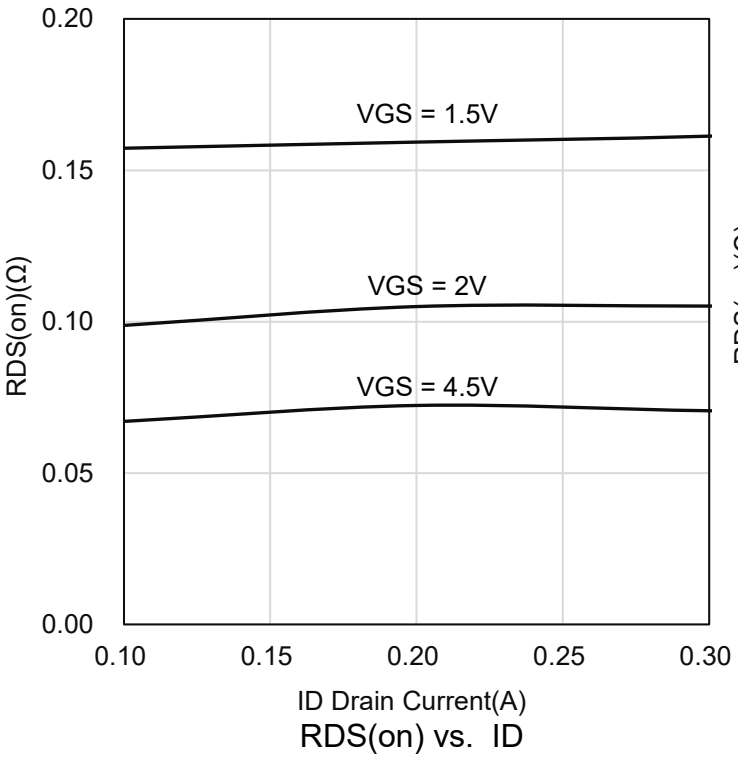
7. ELECTRICAL CHARACTERISTICS CURVES



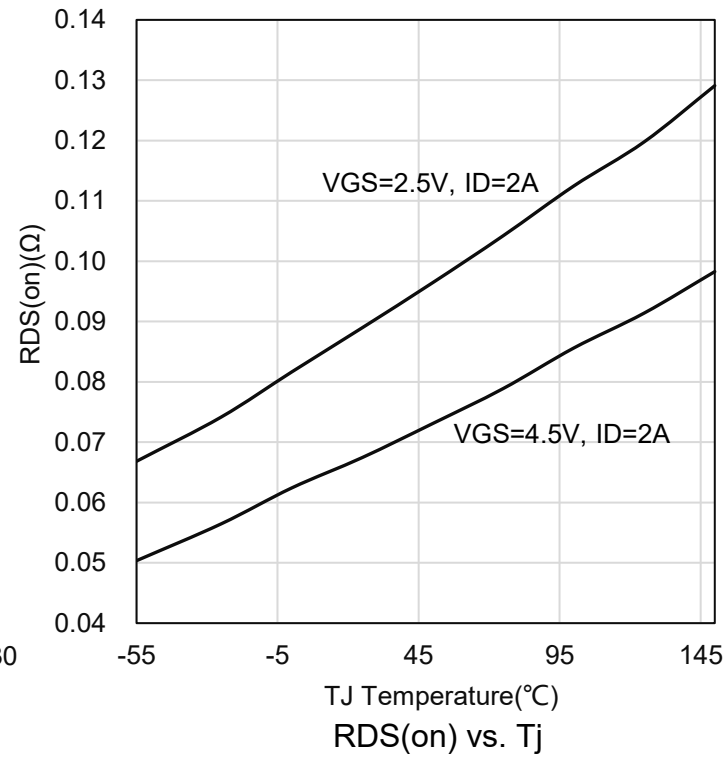
ON-Region Characteristics



Transfer Characteristcs

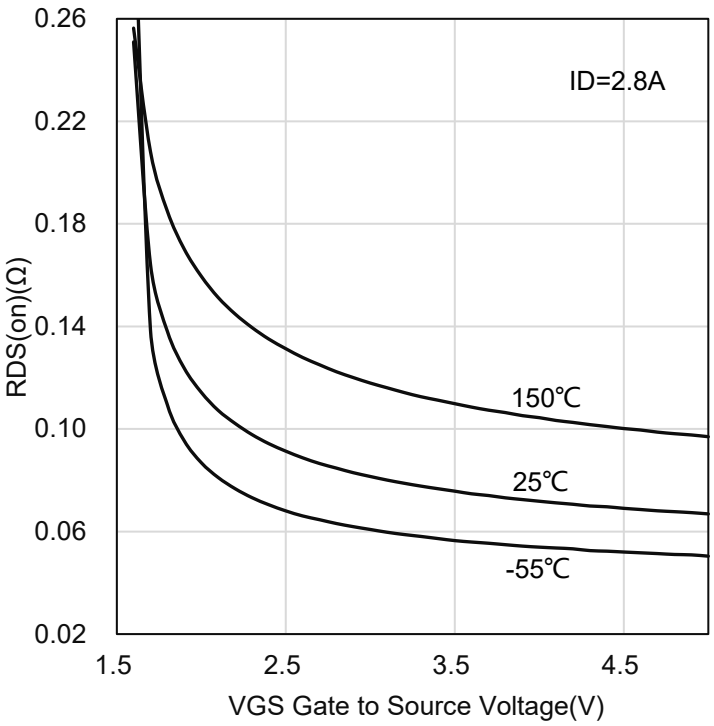


RDS(on) vs. ID

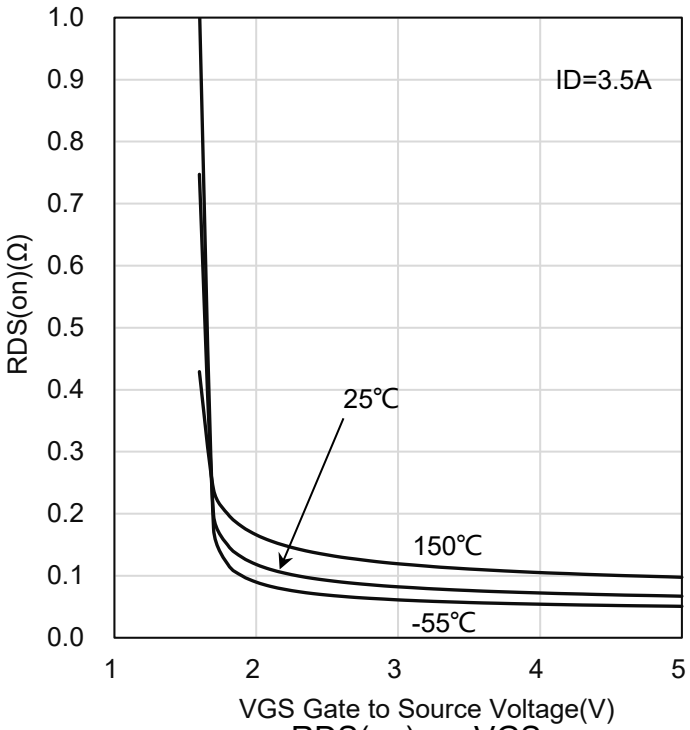


RDS(on) vs. Tj

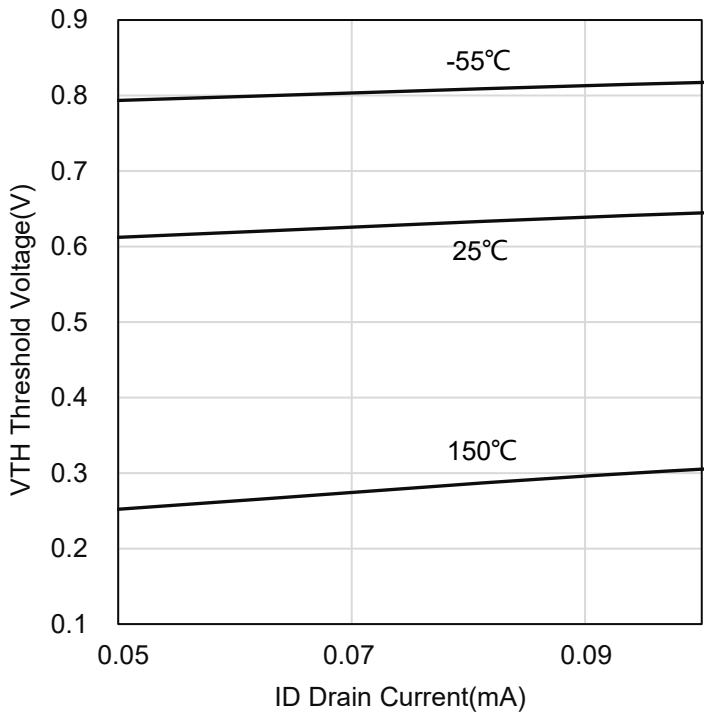
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



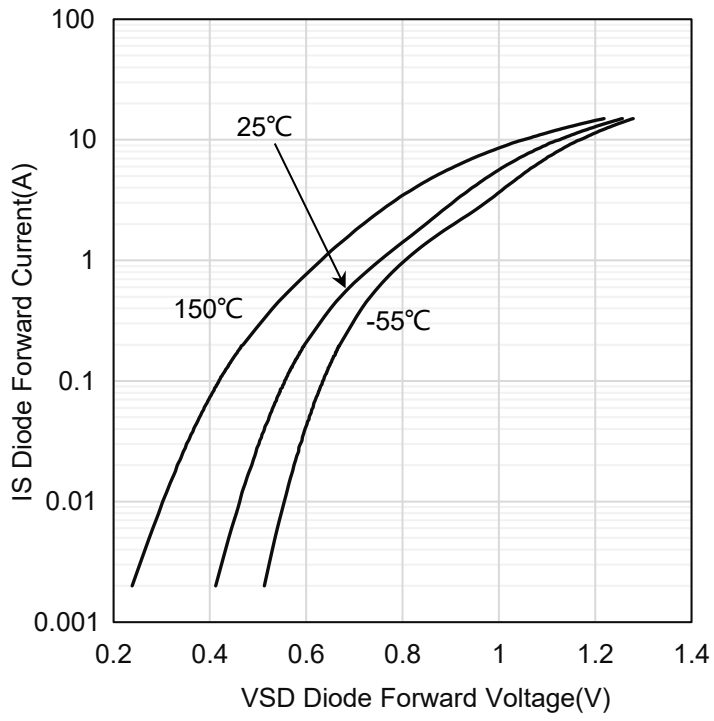
RDS(on) vs. VGS



RDS(on) vs. VGS

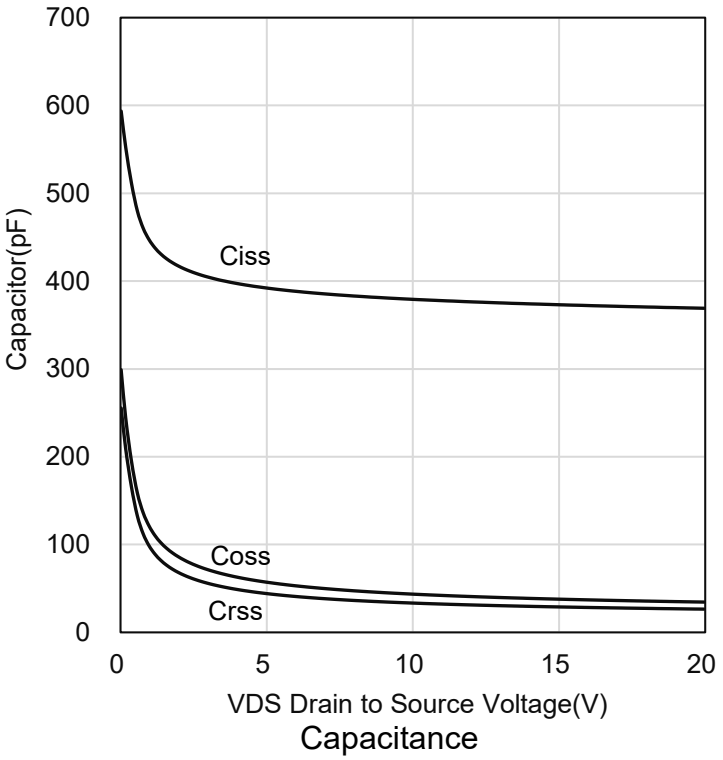


VTH vs. ID

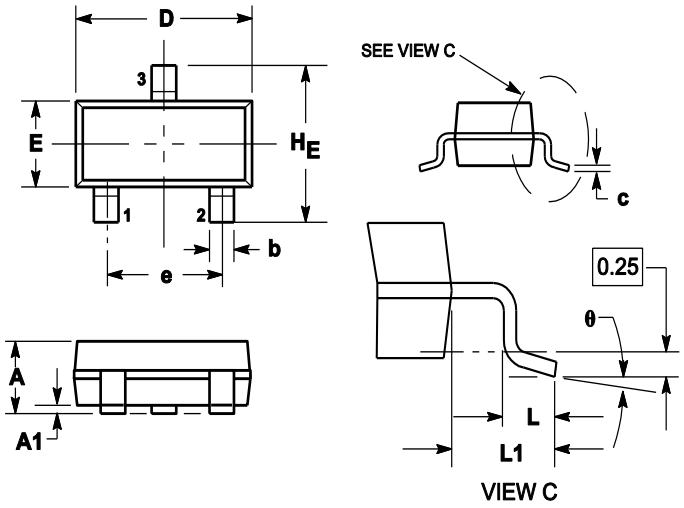


IS vs.VSD

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



8.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 D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

9.SOLDERING FOOTPRINT