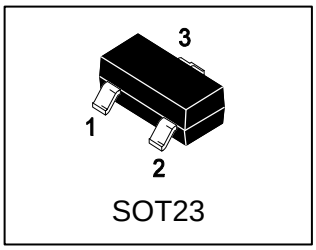
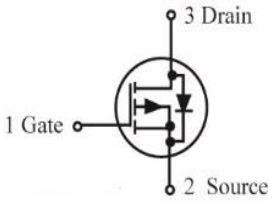
P2311

20V P-Channel Enhancement-Mode MOSFET

1. FEATURES



- VDS =-20V
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- Advanced trench process technology
- High density cell design for ultra low on-resistance
- Fully characterized avalanche voltage and current improved shoot-through FOM



2. APPLICATIONS

- Simple drive requirement
- Small package outline
- Surface mount device

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
P2311	AL	3000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	-20	V
Gate–to–Source Voltage – Continuous	VGS	±12	V
Drain Current – Continuous TA = 25°C – Pulsed(Note 1)	 ID IDM	 -2.5 -8	 A
Avalanche Current	IAS	8	A
Avalanche energy (L=0.1mH)	EAS	3.2	mJ

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Maximum Power Dissipation	PD	0.9	W
Thermal Resistance, Junction–to–Ambient(Note 2)	RΘJA	140	ºC/W
Junction and Storage temperature	TJ,Tstg	−55~+150	° C

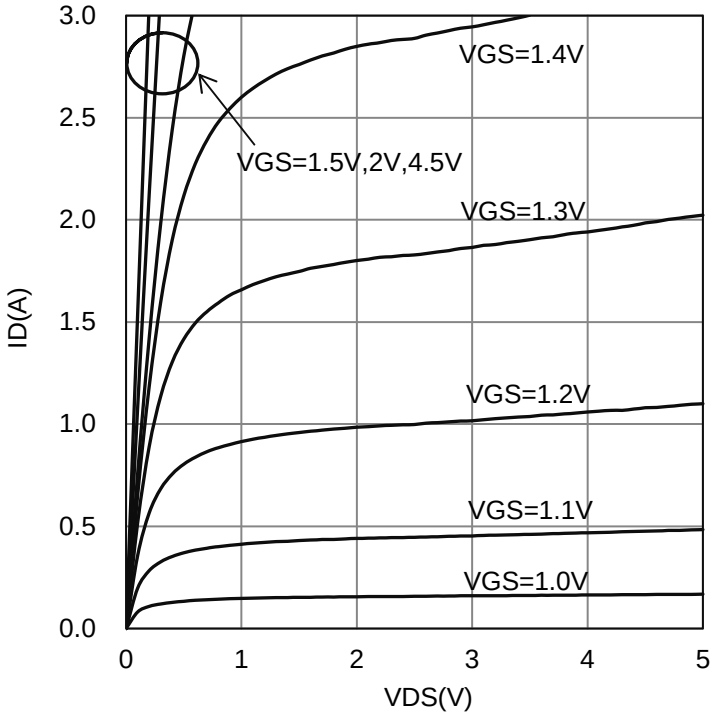
1. Repetitive Rating: Pulse width limited by the Maximum junction temperation.
2. 1-in² 2oz Cu PCB board.

6. ELECTRICAL CHARACTERISTICS (Ta= 25ºC)

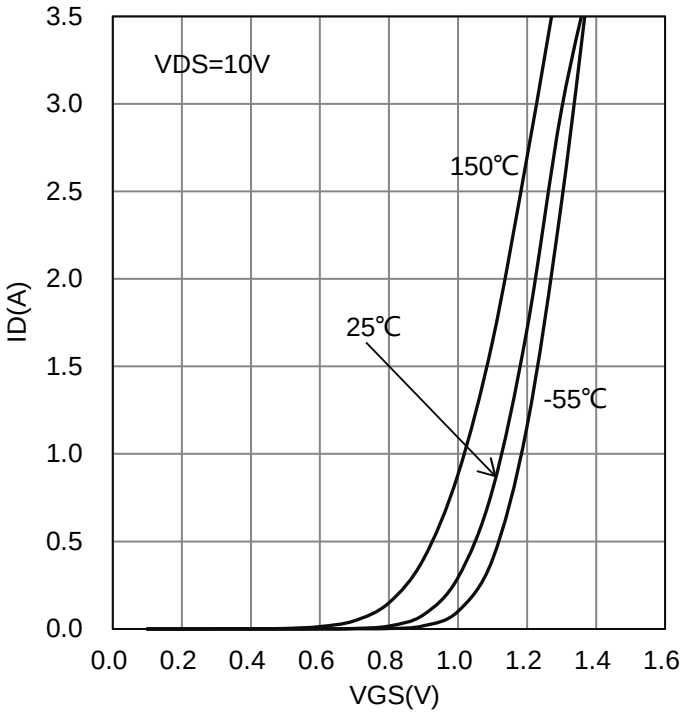
Characteristic		Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)		VBRDSS	-20	-	-	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = -9.6 V)		IDSS	-	-	-1	μA
Gate–Body Leakage Current, Forward (VGS = ± 12 ,VDS=0V)		IGSS	-	-	± 10	uA
Gate Threshold Voltage (VDS = VGS, ID = -250μA)		VGS(th)	-0.4	-	-0.9	V
Static Drain–Source On–State Resistance (VGS = -4.5 V, ID = -2.8 A) (VGS = -2.5 V, ID = -2 A)		RDS(on)	- -	85 100	100 130	mΩ
Forward Transconductance (VDS = -5V, ID = -4.0A)		gfs	-	8.5	-	S
Total Gate Charge(4.5V)	(VDS = -6V, ID=-2.8A)	Qg	-	6	-	nC
Total Gate Charge(10V)		Qg	-	11	-	
Gate-Source Charge		Qgs	-	1.7	-	
Gate-Drain Charge		Qgd	-	1.2	-	
Input Capacitance	(VDS = -6V, VGS=0V, f=1.0MHz)	Ciss	-	545	-	pF
Output Capacitance		Coss	-	62	-	
Reverse Transfer Capacitance		Crss	-	53	-	
Turn-On Delay Time	(VDS = -6V,RL= 6.2Ω,VGEN=-4.5 V,RG=6.2Ω)	td(on)	-	3.6	-	ns
Rise Time		tr	-	10.5	-	
Turn-Off Delay Time		td(off)	-	98	-	
Fall Time		tf	-	54	-	
Forward Voltage (VGS = 0 V, ISD = -0.75 A)		VSD	-	-0.8	-1.2	V
Gate-Resistance (VDS=0V,VGS=0V,f=1.0MHz)		Rg	-	39.6	-	Ω

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

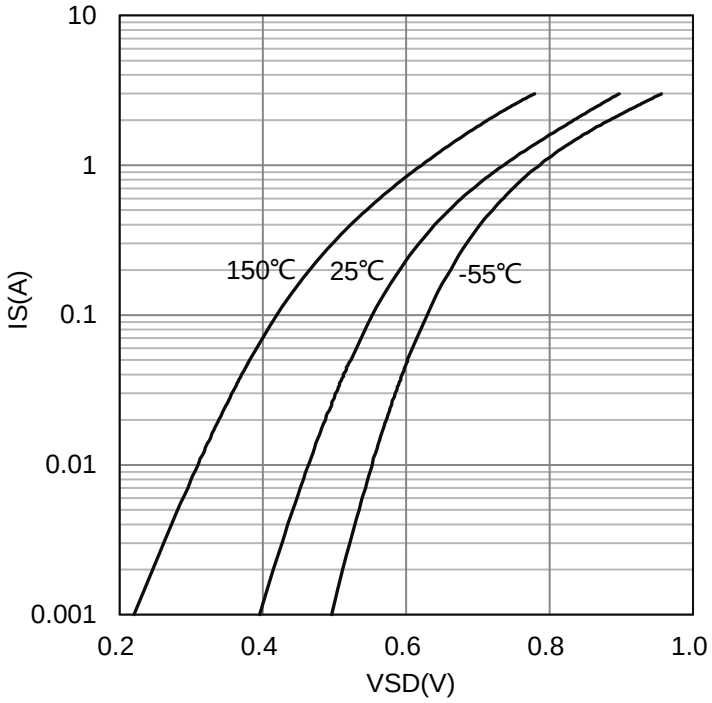
7. ELECTRICAL CHARACTERISTICS CURVES



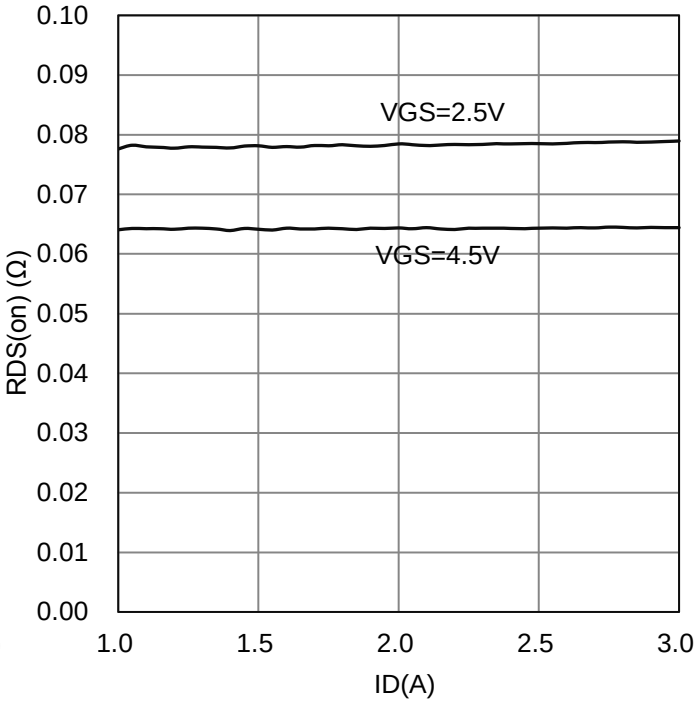
ID vs. VDS



ID vs. VGS

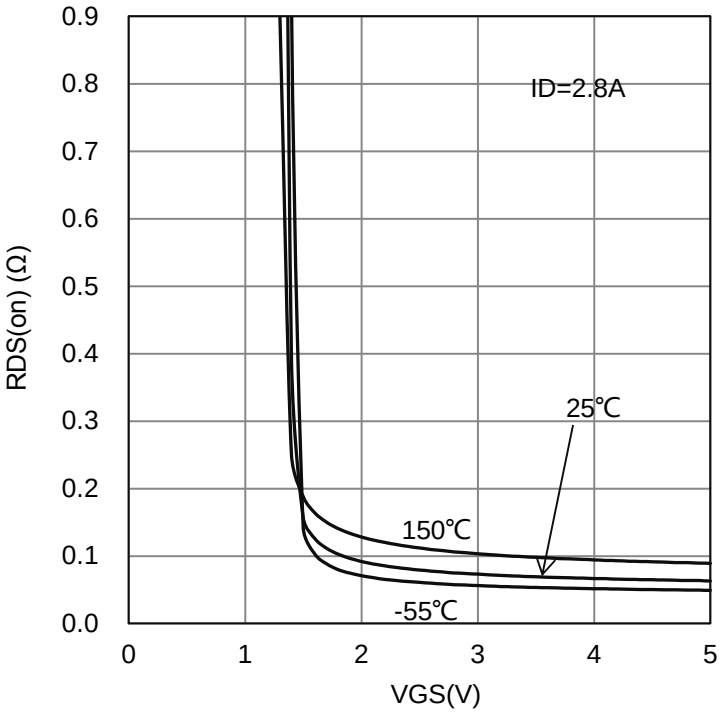


IS vs. VSD

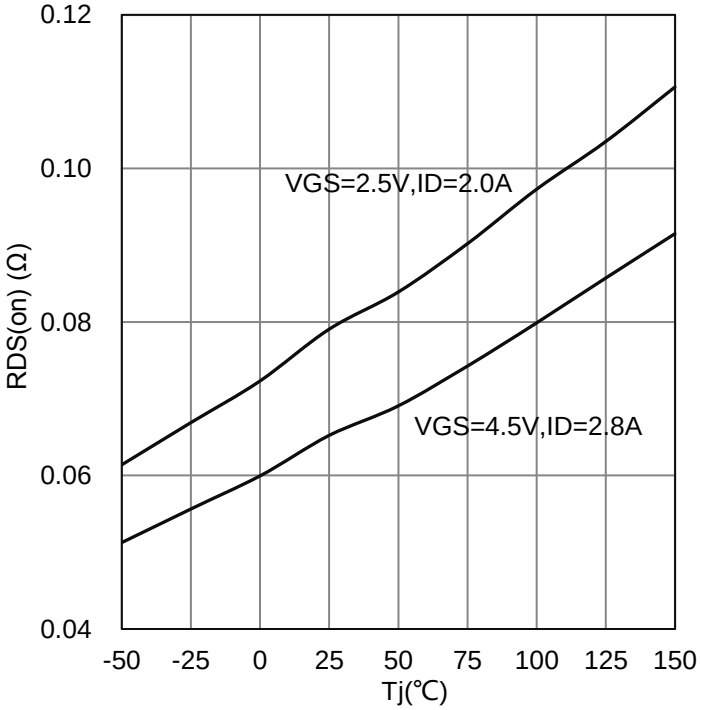


RDS(on) vs. ID

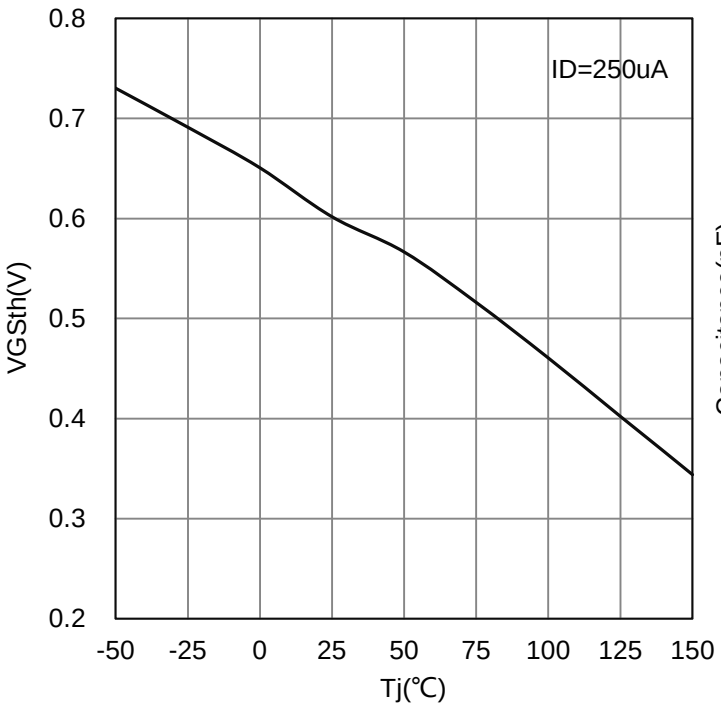
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



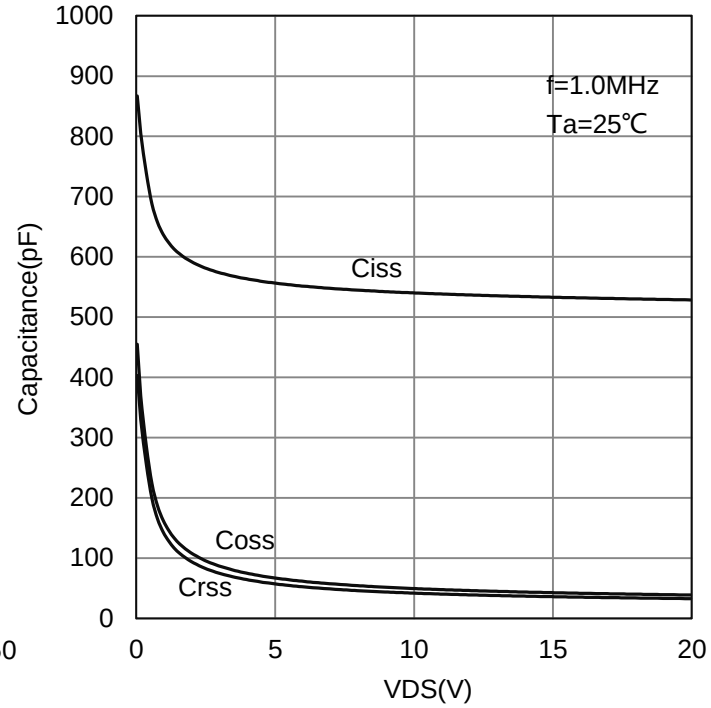
RDS(on) vs. VGS



RDS(on) vs. Tj

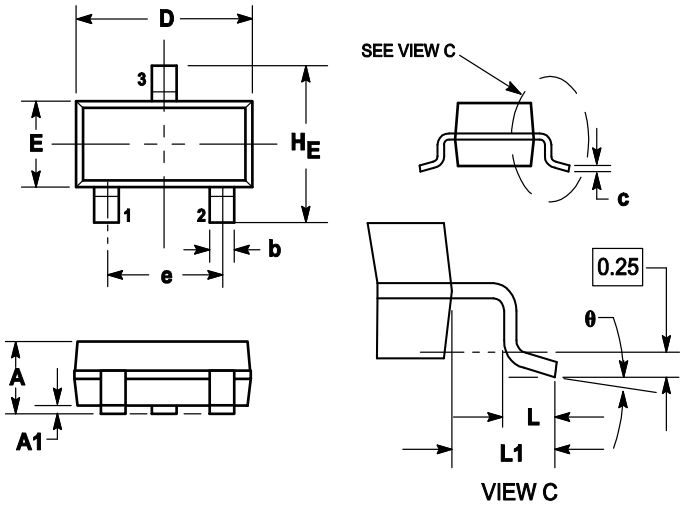


VGSth vs. Tj



Capacitance

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