

# P2323

# S-P2323

## 12V P-Channel Enhancement MOSFET

### 1. FEATURES

- $V_{DS} = -12V$
- $R_{DS(ON)} \leq 32m\Omega, V_{GS}@-4.5V, I_{DS}@-1.0A$
- $R_{DS(ON)} \leq 40m\Omega, V_{GS}@-2.5V, I_{DS}@-1.0A$
- $R_{DS(ON)} \leq 71m\Omega, V_{GS}@-1.8V, I_{DS}@-1.0A$
- 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

- Battery Switch
- High Side Load Switch

### 3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
P2323	12K	3000/Tape&Reel

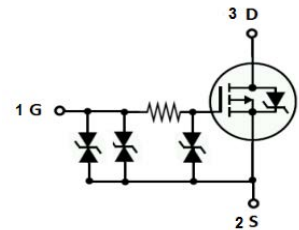
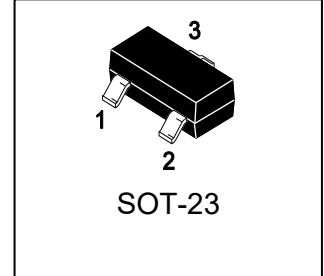
### 4. MAXIMUM RATINGS( $T_a = 25^\circ C$ )

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	$V_{DSS}$	-12	V
Gate–to–Source Voltage – Continuous	$V_{GS}$	$\pm 8$	V
Drain Current			
– Continuous $T_A = 25^\circ C$	$I_D$	-6	A
– Pulsed(Note 1)	$I_{DM}$	-21	A
Avalanche Current( $L=0.1mH$ )	$I_{AS}$	15	A
Avalanche energy( $L=0.1mH$ )	$E_{AS}$	11.25	mJ

### 5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Maximum Power Dissipation	$P_D$	0.9	W
Thermal Resistance, Junction–to–Ambient(Note 2)	$R_{\theta JA}$	140	$^\circ C/W$
Junction and Storage temperature	$T_J, T_{stg}$	$-55 \sim +150$	$^\circ C$

1. Repetitive Rating: Pulse width limited by the Maximum junction temperature.
2. 1-in<sup>2</sup> 2oz Cu PCB board.



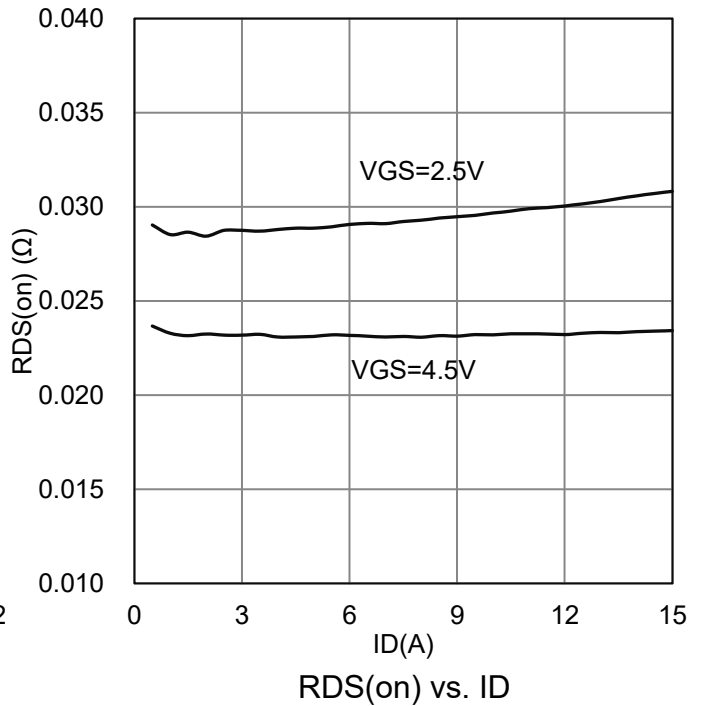
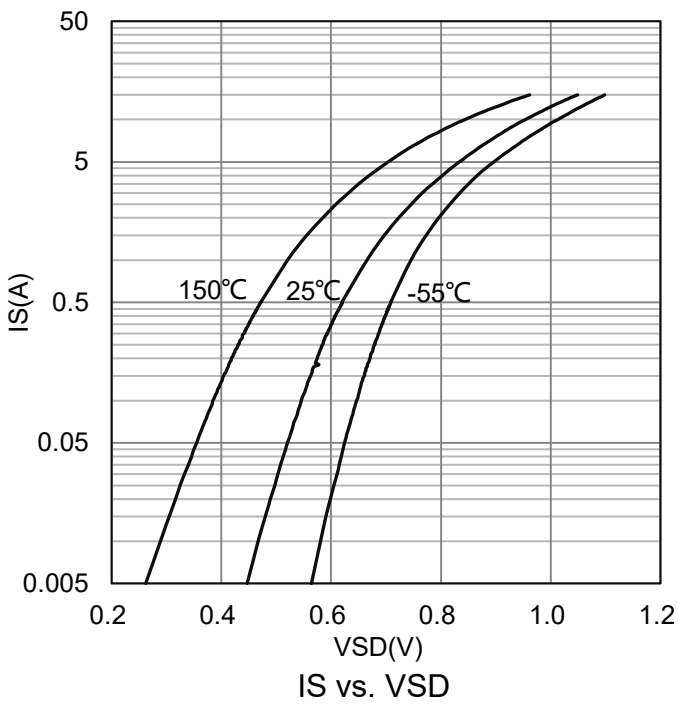
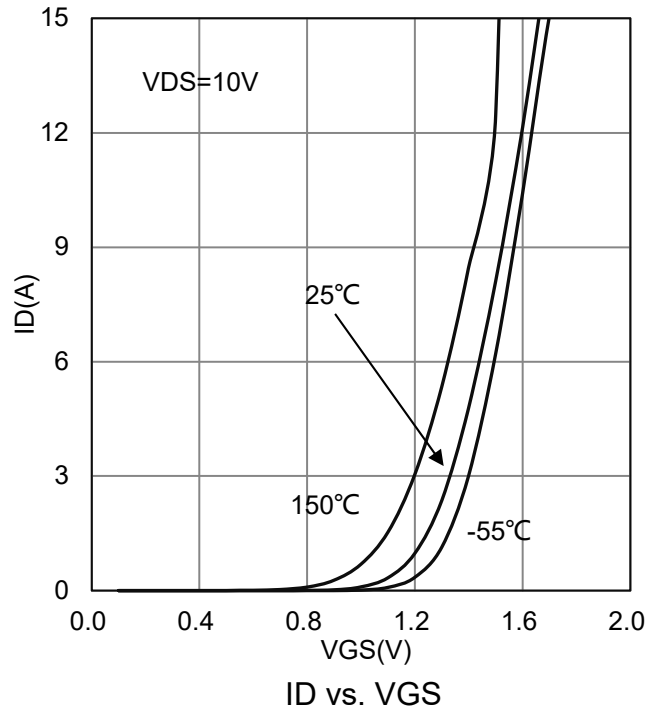
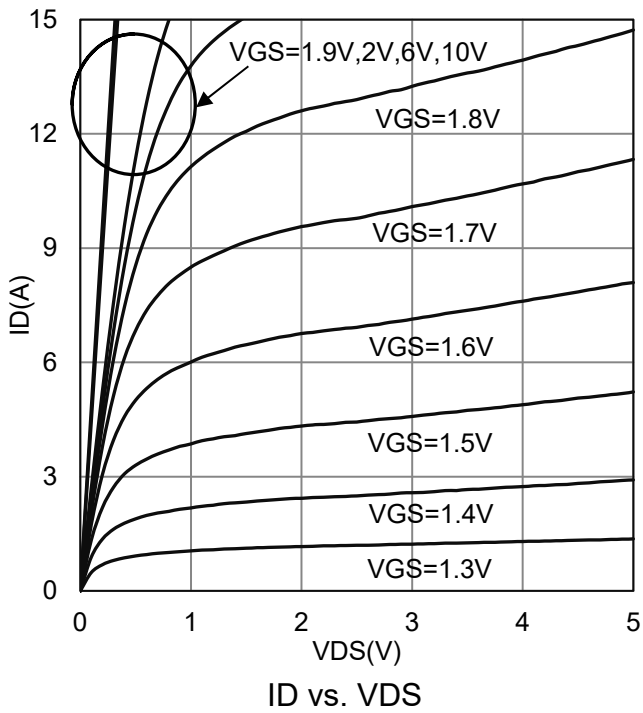
## 6. ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit	
STATIC						
Drain-Source Breakdown Voltage (VGS = 0, ID = -250 $\mu$ A)	VBRDSS	-12	-	-	V	
Gate-Source Threshold Voltage (VDS = VGS, ID = -250 $\mu$ A)	VGS(th)	-	-	-1	V	
Gate-Body Leakage Current (VDS = 0V, VGS = $\pm$ 8V)	IGSS	-	-	$\pm$ 10	$\mu$ A	
Zero Gate Voltage Drain Current (VDS = -12 V, VGS = 0 V)	IDSS	-	-	-1	$\mu$ A	
Drain-Source On-Resistance(Note 3) (VGS = -4.5 V, ID = -1 A) (VGS = -2.5 V, ID = -1 A) (VGS = -1.8 V, ID = -1 A)	RDS(ON)	-	27 32 45	32 40 71	m $\Omega$	
Diode Forward Voltage(Note 3) (IS = -1 A, VGS = 0 V)	VSD	-	-	-1.5	V	
DYNAMIC						
Total Gate Charge	(VDS = -15 V, VGS = -4.5 V, ID = -4 A)	Qg	-	17	-	nC
Gate-Source Charge		Qgs	-	2	-	
Gate-Drain Charge		Qgd	-	5	-	
Turn-On Delay Time	(VGS = -4.5 V, VDD = -15V ID = -4A RG=1 $\Omega$ )	td(on)	-	8.6	-	ns
Rise Time		tr	-	15	-	
Turn-Off Delay Time		td(off)	-	150	-	
Fall Time		tf	-	88	-	
Input Capacitance	(VDS = -15 V, VGS = 0 V, f = 1 MHz)	Ciss	-	1624	-	pF
Output Capacitance		Coss	-	315	-	
Reverse Transfer Capacitance		Crss	-	348	-	
Gate Resistance (VDS=0V, VGS=0V, f=1.0MHz)	Rg	-	188	-	$\Omega$	

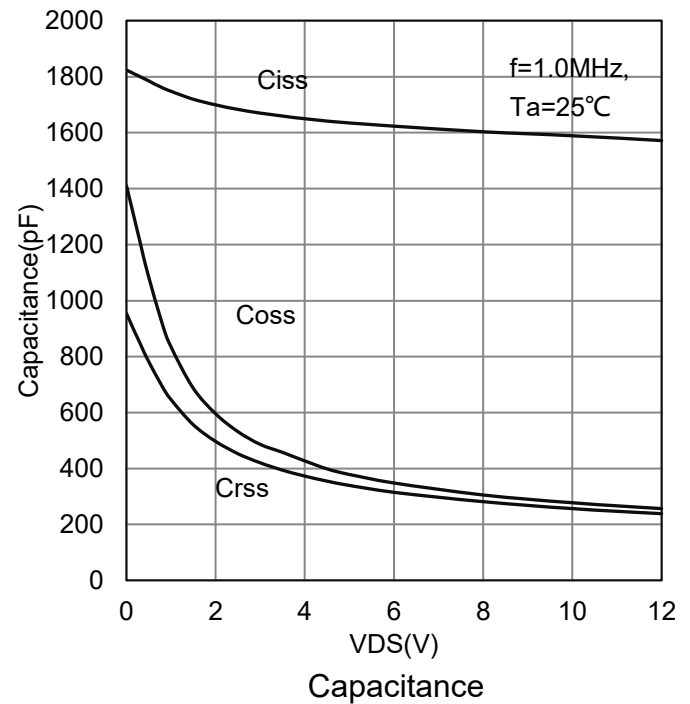
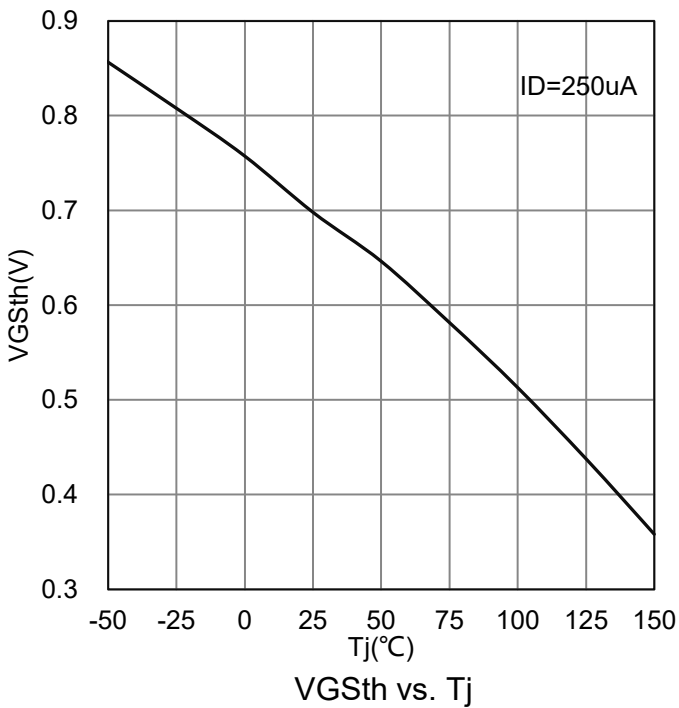
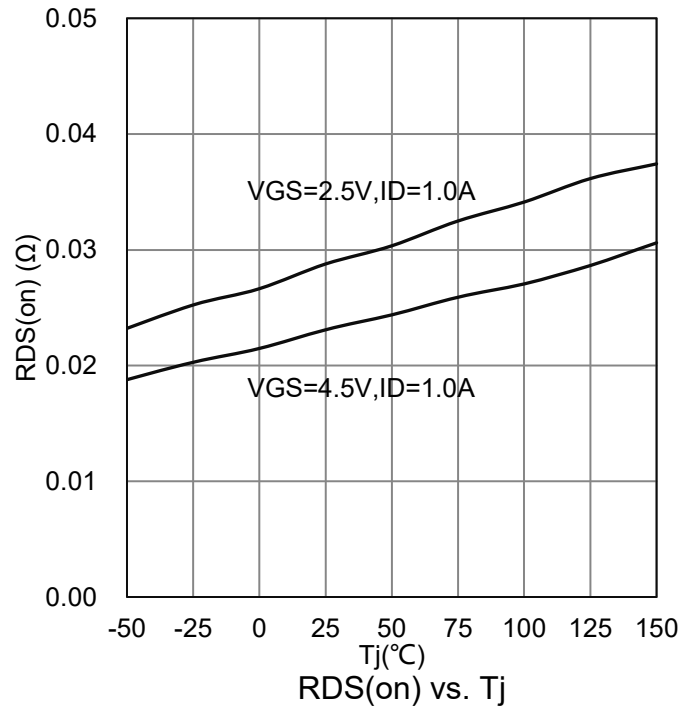
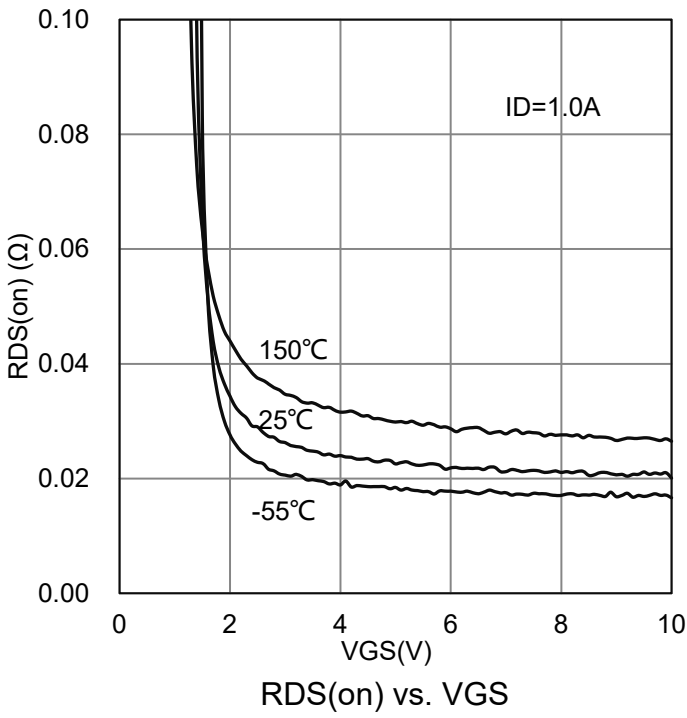
3. Pulse Test: pulse width  $\leq$  300  $\mu$ s, duty cycle  $\leq$  2%



7. ELECTRICAL CHARACTERISTICS CURVES



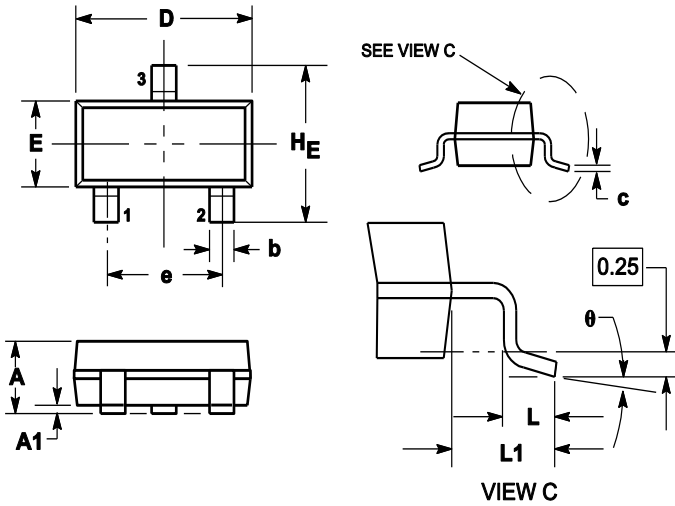
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



### 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.



DIM	MILLIMETERS			INCHES		
	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
HE	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

### 9.SOLDERING FOOTPRINT

