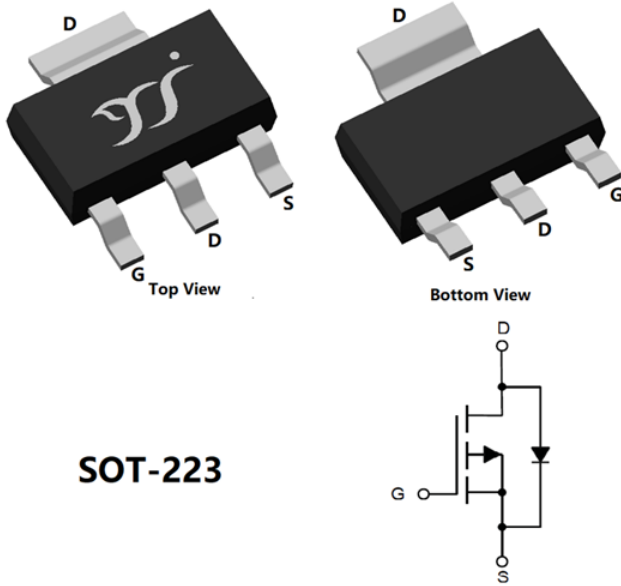




P-Channel Enhancement Mode Field Effect Transistor



SOT-223

Product Summary

• V_{DS}	-100V
• I_D	-2A
• $R_{DS(ON)}$ (at $V_{GS}=-10V$)	<200m Ω
• $R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	<250m Ω
• ESD Level(HBM)	Class 1C

General Description

- Extremely low switching loss
- Excellent stability and uniformity
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Power management
- Load switch

■ Limiting Values

Parameter	Conditions		Symbol	Min	Max	Unit
Drain-source Voltage			V _{DS}	-	-100	V
Gate-source Voltage			V _{GS}	-20	20	
Continuous Drain Current (Note 1,2)	Steady-State	T _A =25°C,V _{GS} =-10V	I _D	-	-2	A
		T _A =100°C,V _{GS} =-10V		-	-1.26	
Pulsed Drain Current	T _A =25°C,t _p ≤10μs		I _{DM}	-	-16	
Maximum Body-Diode Continuous Current	T _A =25°C		I _S		-1.4	
Total Power Dissipation (Note 1,2)	Steady-State	T _A =25°C	P _D	-	1.64	W
		T _A =100°C		-	0.65	
Junction and Storage Temperature Range			T _J ,T _{STG}	-55	150	°C

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient (Note 2)	Steady-State	$R_{\theta JA}$	-	76	$^{\circ}C/W$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJM200P10AJ	F2	M200P10A	2500	5000	25000	13" reel



YJM200P10AJ

■ Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V,I _D =-250μA,T _J =25℃	-100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V,V _{GS} =0V,T _J =25℃	-	-	-1	μA
		V _{DS} =-100V,V _{GS} =0V,T _J =150℃	-	-	-100	
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V,V _{DS} =0V,T _J =25℃	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} ,I _D =-250μA,T _J =25℃	-1	-1.5	-2	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V,I _D =-2A,T _J =25℃	-	158	200	mΩ
		V _{GS} =-4.5V,I _D =-1A,T _J =25℃	-	168	250	mΩ
Diode Forward Voltage	V _{SD}	I _S =-1A,V _{GS} =0V,T _J =25℃	-	-0.77	-1.2	V
Gate Resistance	R _G	f=1MHz,T _J =25℃	-	18	-	Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-50V,V _{GS} =0V,f=1MHz,T _J =25℃	-	1369	-	pF
Output Capacitance	C _{oss}		-	34	-	
Reverse Transfer Capacitance	C _{rss}		-	29	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-10V,V _{DS} =-50V,I _D =-2A,T _J =25℃	-	25.5	-	nC
Gate-Source Charge	Q _{gs}		-	2.6	-	
Gate-Drain Charge	Q _{gd}		-	3.1	-	
Reverse Recovery Charge	Q _{rr}	I _F =-2A,di/dt=100A/μs,V _{GS} =0V, V _R =-50V,T _J =25℃	-	32	-	nC
Reverse Recovery Time	t _{rr}		-	24	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V,V _{DS} =-50V,I _D =-2A,R _{GEN} =3Ω, T _J =25℃	-	5.9	-	ns
Turn-on Rise Time	t _r		-	3.6	-	
Turn-off Delay Time	t _{D(off)}		-	140	-	
Turn-off Fall Time	t _f		-	55	-	

Note:

- The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
- The value of $R_{\theta JA}$ is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in² pad of 2oz. Copper, in the still air environment with $T_A=25^\circ C$. The maximum allowed junction temperature of $150^\circ C$. The value in any given application depends on the user's specific board design.

■ Typical Electrical and Thermal Characteristics Diagrams

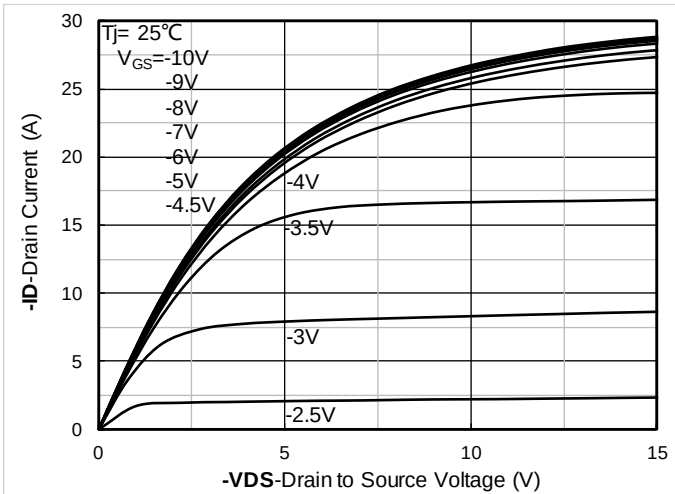


Figure 1. Output Characteristics; typical values

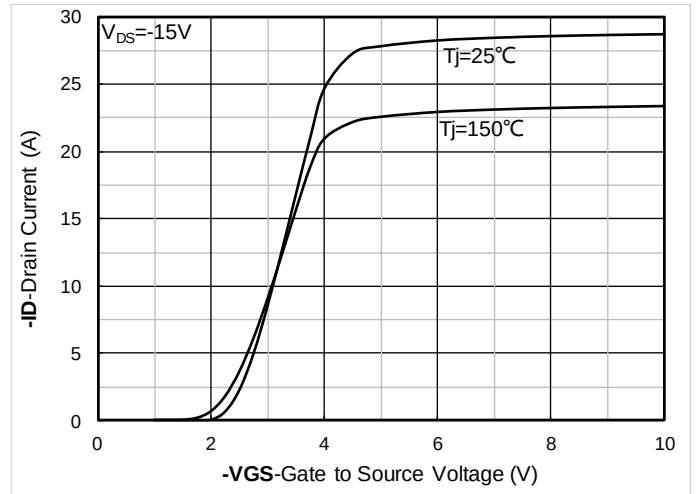


Figure 2. Transfer Characteristics; typical values

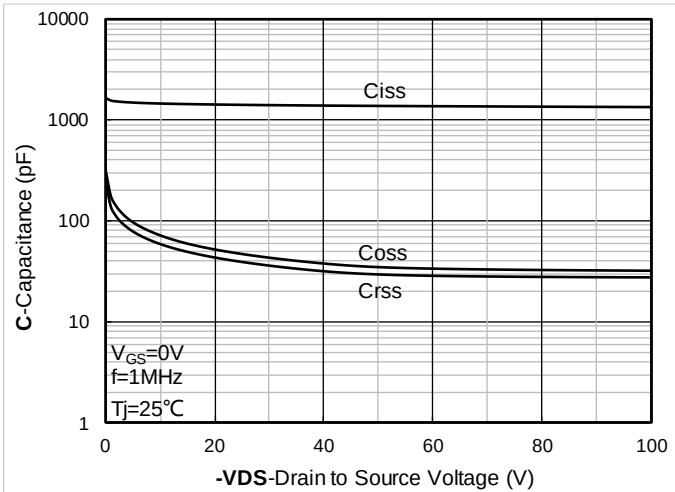


Figure 3. Capacitance Characteristics; typical values

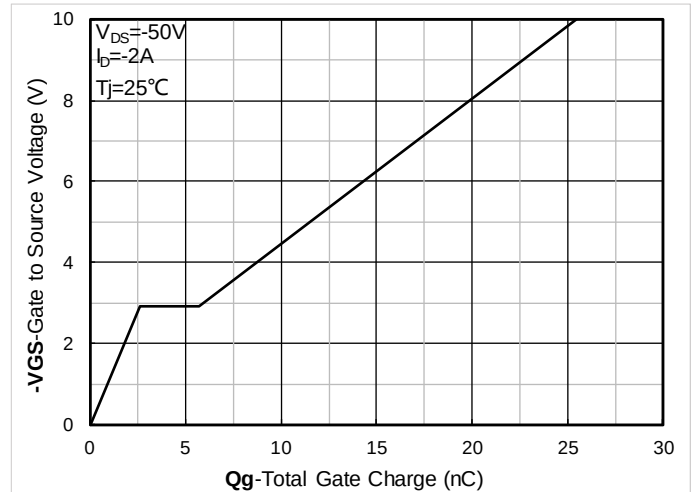


Figure 4. Gate Charge; typical values

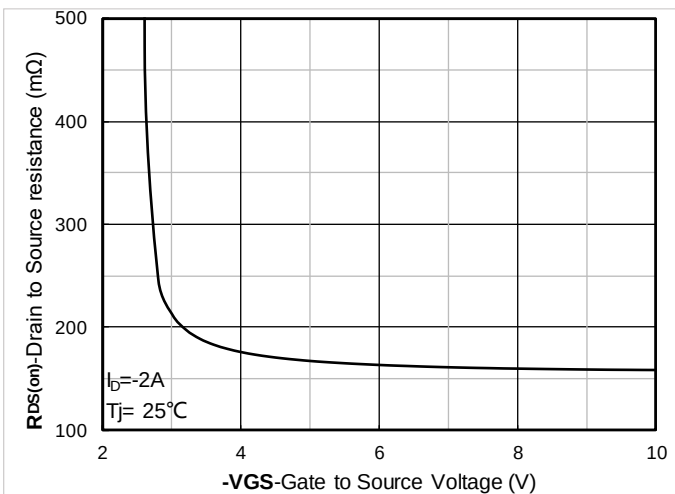


Figure 5. On-Resistance vs. Gate to Source Voltage; typical values

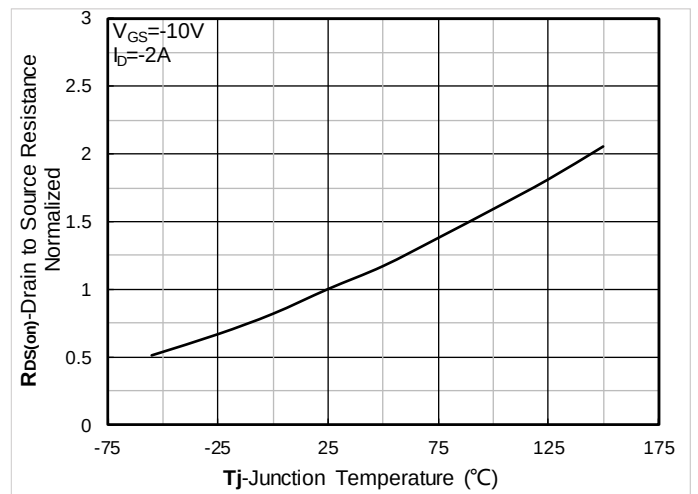


Figure 6. Normalized On-Resistance

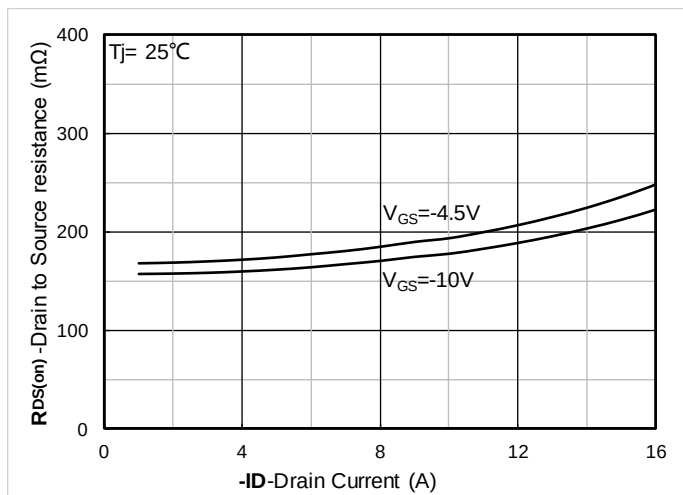


Figure 7. $R_{DS(on)}$ vs. Drain Current; typical values

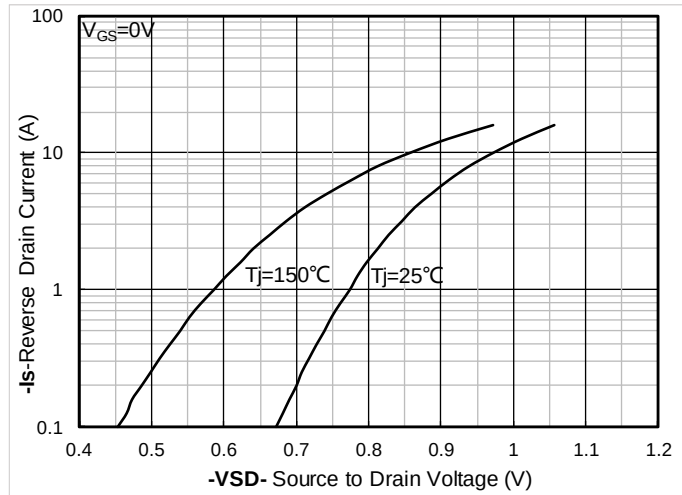


Figure 8. Forward characteristics of reverse diode; typical values

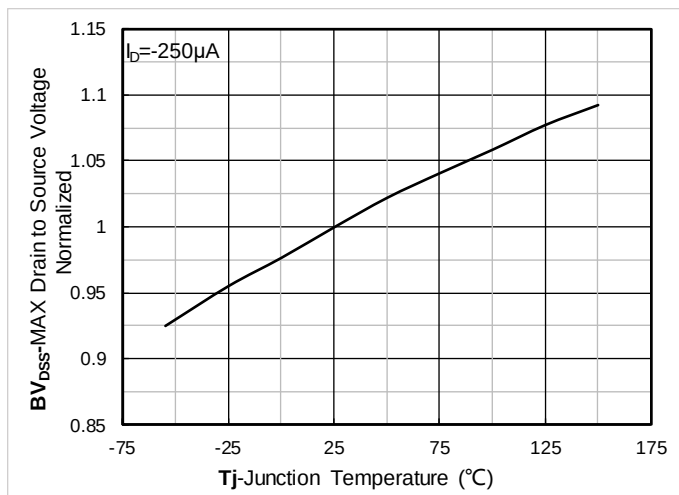


Figure 9. Normalized breakdown voltage

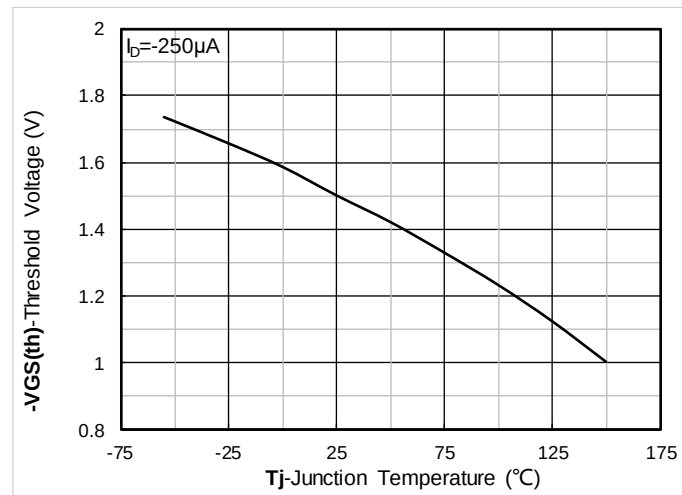


Figure 10. Gate Threshold voltage; typical values

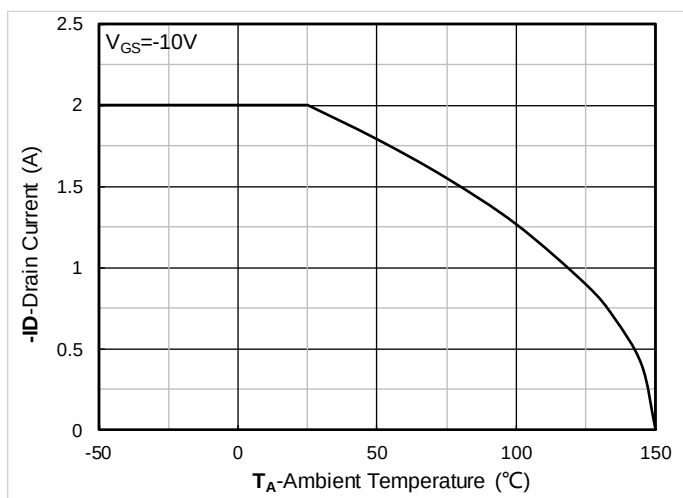


Figure 11. Current dissipation

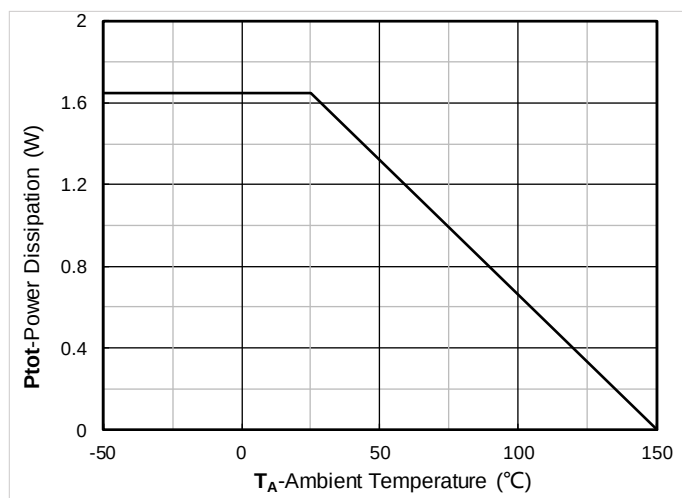


Figure 12. Power dissipation

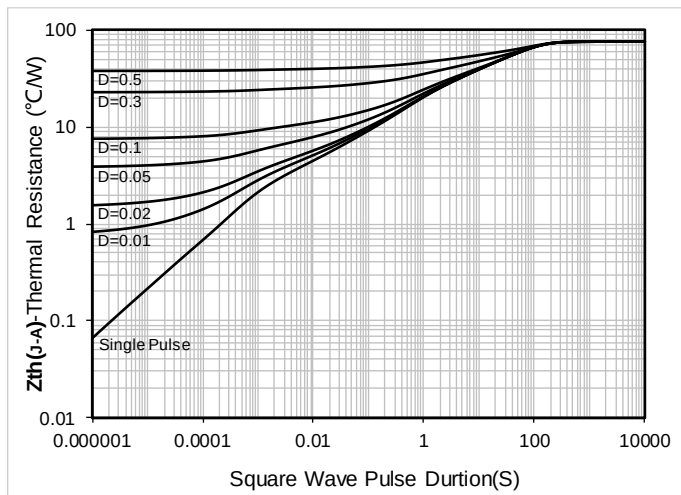


Figure 13. Maximum Transient Thermal Impedance

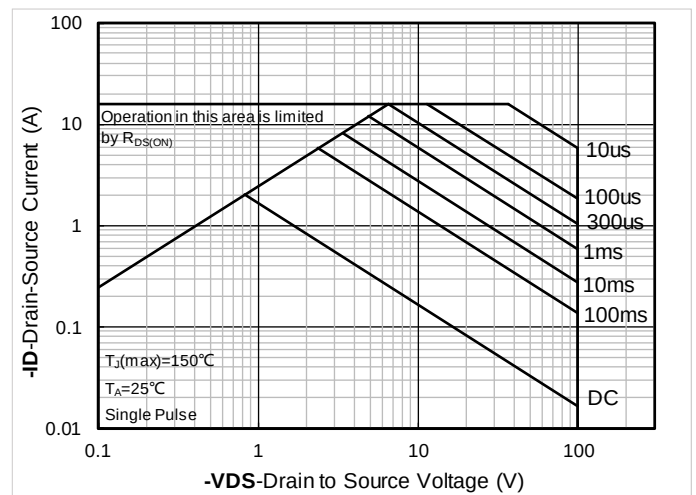
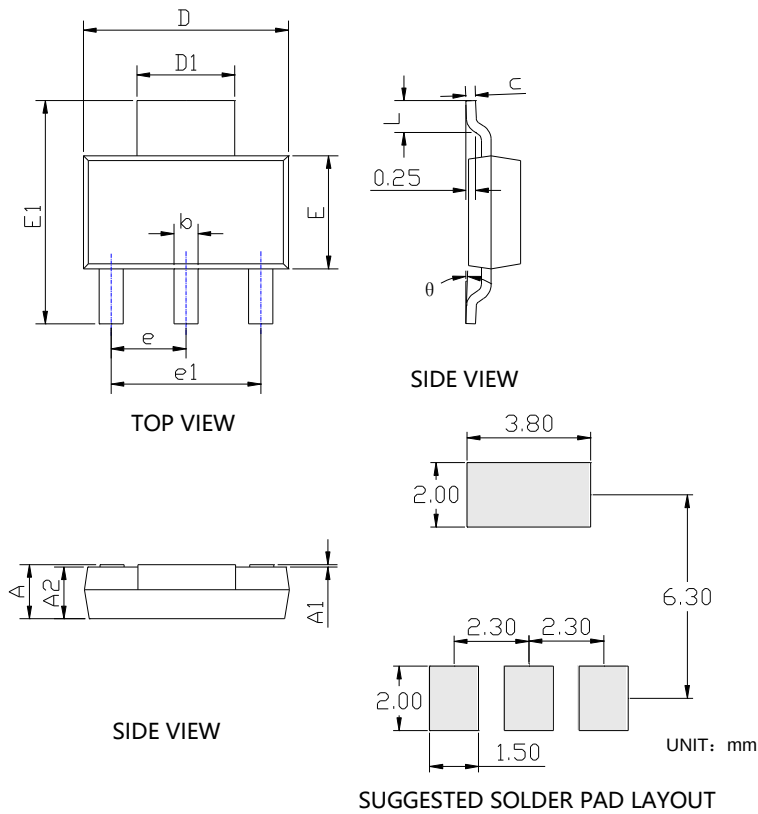


Figure 14. Safe Operation Area



YJM200P10AJ

■ SOT-223 Package information



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.060	0.071	1.520	1.800
A1	0.000	0.004	0.000	0.100
A2	0.059	0.067	1.500	1.700
b	0.026	0.032	0.660	0.820
c	0.010	0.014	0.250	0.350
D	0.244	0.252	6.200	6.400
D1	0.114	0.122	2.900	3.100
E	0.130	0.146	3.300	3.700
E1	0.269	0.278	6.830	7.070
e	0.091BSC		2.300BSC	
e1	0.177	0.185	4.500	4.700
L	0.035	0.045	0.900	1.150
θ	0°	10°	0°	10°

NOTE:

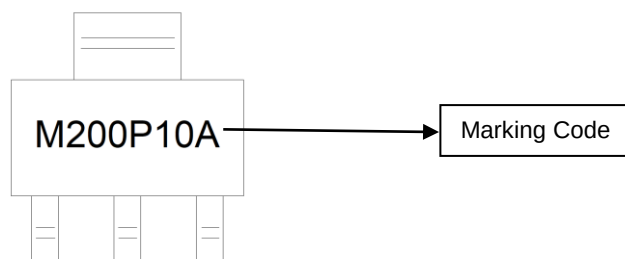
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.

2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.

3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



■ Marking Information



Note:

1. All marking is at middle of the product body
2. All marking is in laser printing
3. M200P10A is marking code
4. Body color: Black



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