BORN SEMICONDUCTOR

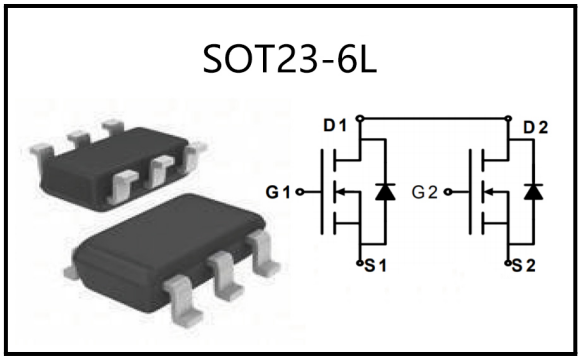
BM8205

20V Dual N-Channel Enhancement MOSFET

Features

- V_{DS}=20V
- I_D=5A
- $R_{DS(ON)}$@V_{GS}=4.5V, TYP=22mΩ
- $R_{DS(ON)}$@V_{GS}=2.5V, TYP=28mΩ

Package



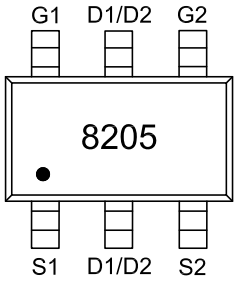
General Description

- Very low on-resistance $R_{DS(ON)}$
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- SOT23-6L for Surface Mount Package.

Application

- Power switching application
- PWM applications
- Hard switched and high frequency circuits
- Uninterruptible power supply

Marking



Ordering information

Order code	Package	Marking	Base qty	Delivery mode
BM8205	SOT23-6L	8205	3K	Tape and reel

Absolute Maximum Ratings (@T_A=25°C unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current (T_J=150°C)(1)	T_A = 25°C	5.0	A
		T_A = 70°C	3.0	
I_{DM}	Pulsed Drain Current(2)		20	A
I_S	Continuous source current (diode conduction)(1)		1.2	A
P_D	Maximum Power Dissipation(1)	T_A = 25°C	1.4	W
		T_A = 70°C	0.9	
T_J,T_{stg}	Operating junction and storage temperature range		-55 to +150	°C

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Revision: 2022-Jan-1-A

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Thermal Characteristics

Symbol	Parameter		Typ.	Max.	Unit
$R_{\theta JA}$	Maximum junction-to-ambient(1)	≤10s	70	90	°C/W
		Steady-State	100	125	
$R_{\theta JC}$	Maximum junction-to-foot	Steady-State	63	80	

Notes:(1)Surface mounted on 1" x 1" FR4 board.

(2)Pulse width limited by maximum junction temperature.

N-Channel Electrical Characteristics @T_A=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
OFF Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250uA	20	–	–	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 20V, V_{GS} = 0V	–	–	1	uA
I_{GSS}	Gate Body Leakage Current	V_{GS} = ±12V, V_{DS} = 0V	–	–	±100	nA
ON Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250uA	0.5	0.75	1.2	V
$R_{DS(on)}$	Drain-Source On-State Resistance(1)	V_{GS} = 4.5V, I_D = 4.0A	–	22	27	mΩ
		V_{GS} = 2.5V, I_D =3.0A	–	28	35	
g_{fs}	Forward transconductance(1)	V_{DS} =5V, I_D =4A	–	10	–	S
Dynamic Characteristics(2)						
C_{iss}	Input Capacitance	V_{DS} = 10V,	–	600	–	pF
C_{oss}	Output Capacitance	V_{GS} = 0V,	–	330	–	
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHZ	–	140	–	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 10V,	–	18	–	ns
t_r	Turn-On Rise Time	V_{GEN} = 4.5V,	–	5	–	
$t_{d(off)}$	Turn-Off Delay Time	R_{GEN} = 6.0Ω,	–	43	–	
t_f	Turn-Off Fall Time	R_L = 3Ω	–	20	–	
Q_g	Total Gate Charge	V_{DS} = 10V	–	11	–	nC
Q_{gs}	Gate-Source Charge	I_D =4A,	–	2.3	–	
Q_{gd}	Gate-Drain Charge	V_{GS} = 4.5V	–	2.5	–	
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_S = 2A,V_{GS} = 0V	–	0.76	1.16	V

Notes:

(1)Pulse test: Pulse width ≤300 μs, duty cycle≤2%.

(2)Guaranteed by design, not subject to production testing.

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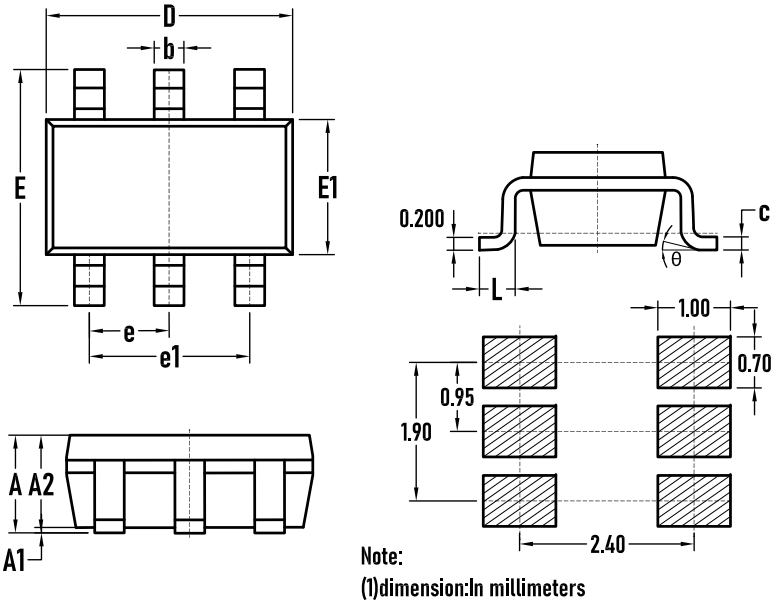
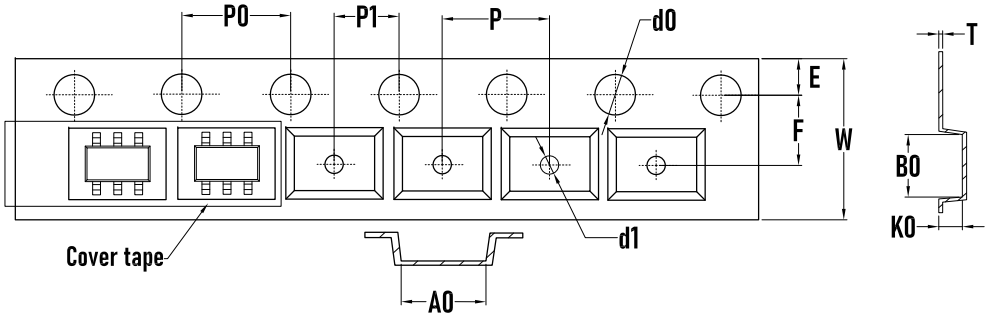
Outline Drawing - SOT23-6L



Note:
(1)dimension:In millimeters

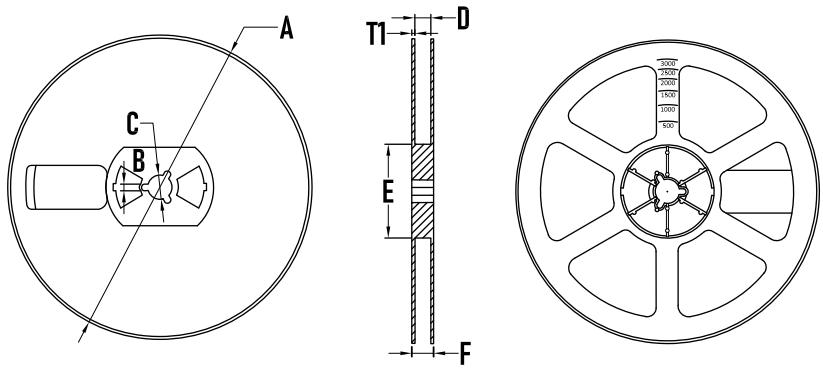
SYMBOL	MILLIMETER		Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
C	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Packaging Tape - SOT23-6L



SYMBOL	MILLIMETER
A0	3.25±0.1
B0	3.3±0.1
d0	1.55±0.1
d1	1.0±0.1
E	1.75±0.1
F	3.50±0.1
K0	1.38±0.1
P	4.00±0.1
P0	4.00±0.1
P1	2.00±0.1
W	8.00±0.2
T	0.2±0.02

Packaging Reel



SYMBOL	MILLIMETER
A	177.8±0.2
B	2.7±0.2
C	13.5±0.2
D	9.6±0.3
E	54.5±0.2
F	12.3±0.3
T1	1.0±0.2
Quantity	3000PCS

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