

SuperMOS – SOT-23-6L 20V V_{DSS} , 22m Ω $R_{DS(ON)}$, 4.9A I_D , N-channel MOSFET

1. Description

The ES8205 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product ES8205 is Pb-free.

2. Features

- 20V, $R_{DS(ON)}=22m\Omega(Typ)$, $V_{GS}=4.5V$
 $R_{DS(ON)}=30m\Omega(Typ)$, $V_{GS}=2.5V$
- Use trench MOSFET technology
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
ES8205	SOT-23-6L	.8205	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
2/5	Drain		
4/6	Gate		
1/3	Source		

Table-2 Pin configuration

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	BV_{DSS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ^a	I_D	$T_A=25^\circ C$	4.9
		$T_A=75^\circ C$	3.8
Maximum Power Dissipation ^a	P_D	$T_A=25^\circ C$	1.12
		$T_A=75^\circ C$	0.67
Pulsed Drain Current ^b	I_{DM}	19.6	A
Operating Junction Temperature	T_J	150	°C
Lead Temperature	T_L	260	°C
Storage Temperature Range	T_{stg}	-55 to 150	°C

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10$ s	$R_{\theta JA}$	90	112	°C/W
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	63	78	

Note:

a: Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

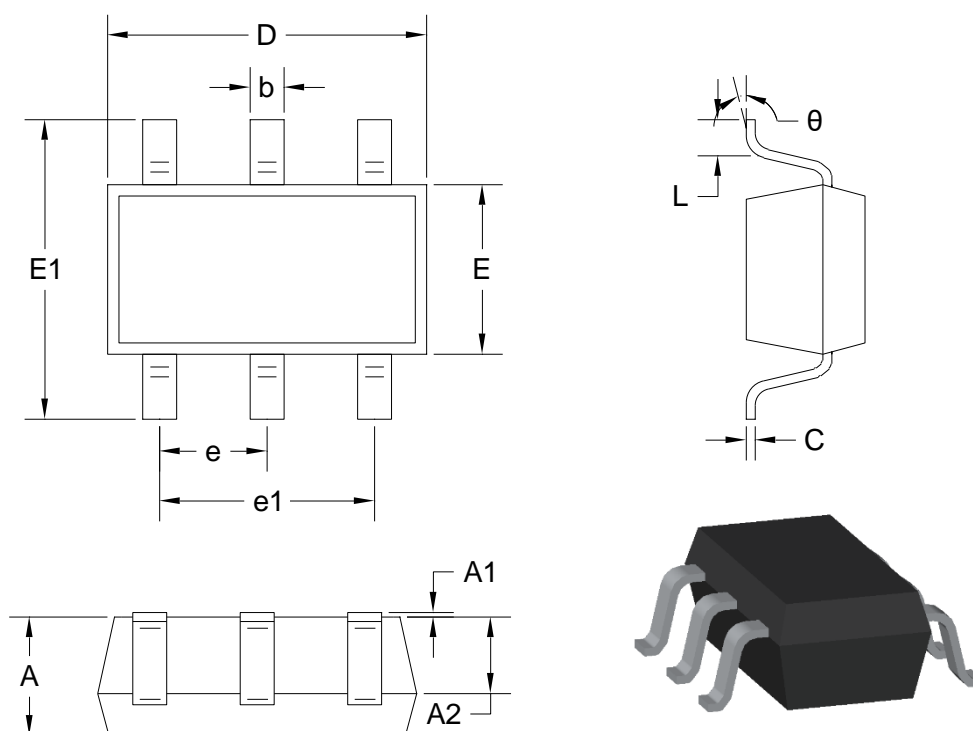
b: Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu s$, Duty Cycle=1%

Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.45	0.65	1.1	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=4.5A$		22	30	m Ω
		$V_{GS}=2.5V, I_D=3.5A$		30	40	
Forward Trans conductance	g_{FS}	$V_{DS}=5.0V, I_D=4.5A$		6.5	42	S
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1.0A$		0.75	1.25	V

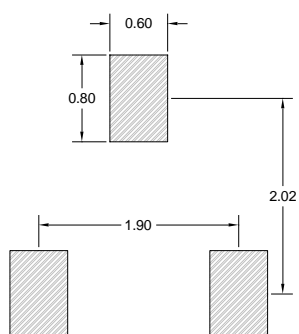
8. Dimension (SOT-23-6L)



Unit: mm

Symbol		A	A1	A2	b	c	D
Spec	Min	1.050	0.000	1.050	0.300	0.100	2.820
	Max	1.250	0.100	1.150	0.500	0.200	3.020
Symbol		E	E1	e	e1	L	θ
Spec	Min	1.500	2.650	0.950BSC	1.800	0.300	0°
	Max	1.700	2.950		2.000	0.600	8°

Table-5 Product dimensions in millimeter



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only

Unit: mm

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