



SOT-23 Plastic-Encapsulate MOSFET

CCM2309 P-Channel Power MOSFET

V _{(BR)DSS}	R _{DS(on)TYP}	I _D
-60V	120mΩ@-10V	-1.6A
	160mΩ@-4.5V	

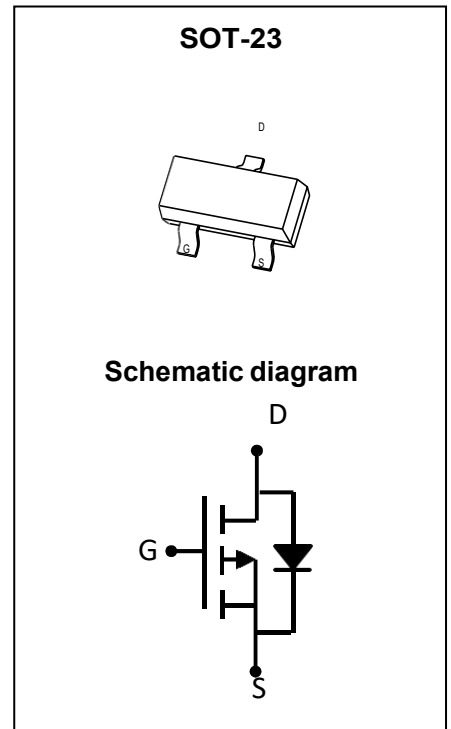
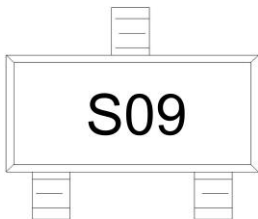
Feature

- Trench Technology Power MOSFET
- Low R_{DS(ON)}
- Low Gate Charge
- Low Gate Resistance
- AEC Q101 qualified

Application

- DC/DC Converter
- Power Management

MARKING



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V _{DS}	-60	V
Gate - Source Voltage	V _{GS}	±20	V
Continuous Drain Current ^{1,5}	I _D	-1.6	A
Pulsed Drain Current ²	I _{DM}	-8.0	A
Power Dissipation ⁵	P _D	0.7	W
Thermal Resistance from Junction to Ambient ⁵	R _{θJA}	180	°C/W
Junction Temperature	T _J	175	°C
Storage Temperature	T _{STG}	-55~ +175	°C

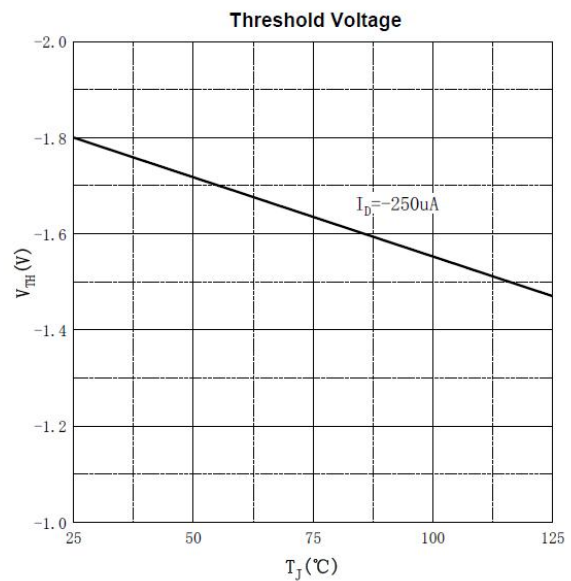
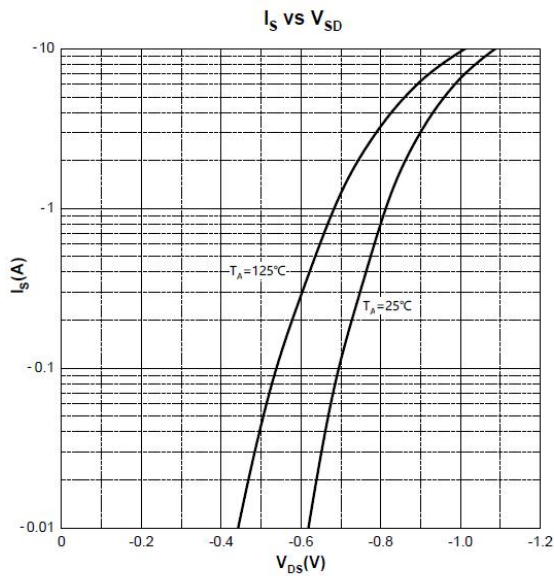
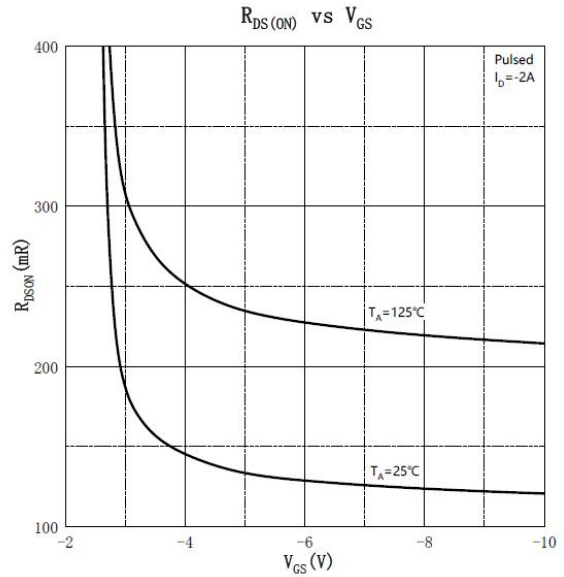
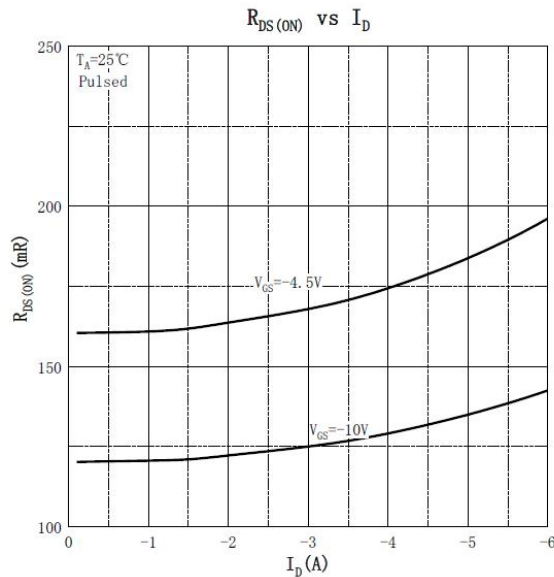
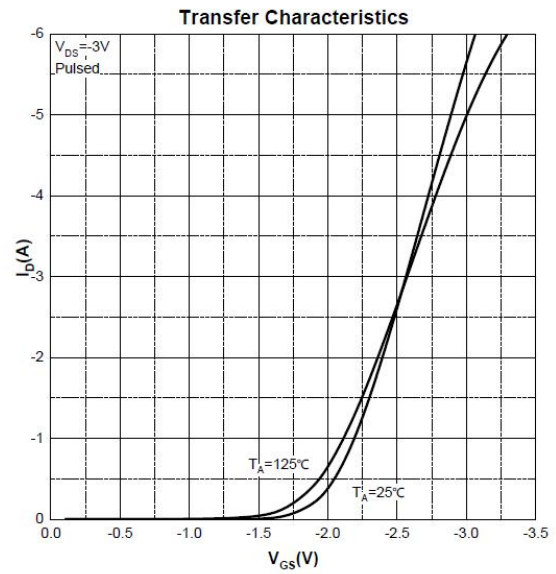
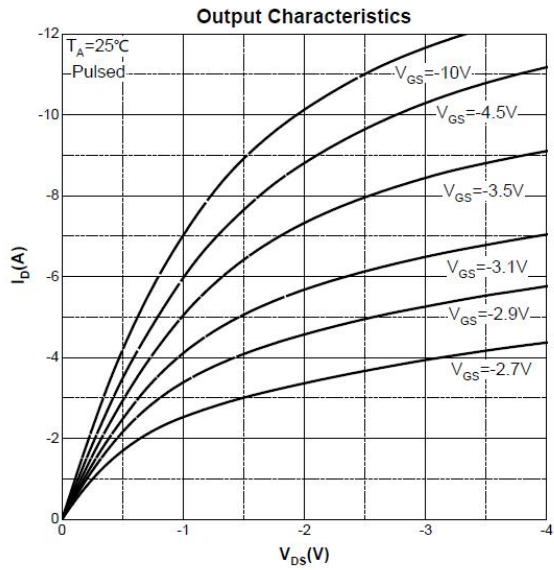
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -48V, V _{GS} = 0V			-1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics³						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.8	-3.0	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -1.5A		120	160	mΩ
		V _{GS} = -4.5V, I _D = -1.0A		160	240	
Forward Transconductance	g _{FS}	V _{DS} = -10V, I _D = -1.5A	2			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -30V, V _{GS} = 0V, f = 1MHz		350		pF
Output Capacitance	C _{oss}			32		
Reverse Transfer Capacitance	C _{rss}			26		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		5		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = -30V, V _{GS} = -10V, I _D = -2.0A		7		nC
Gate-source Charge	Q _{gs}			2.2		
Gate-drain Charge	Q _{gd}			3		
Turn-on Delay Time	t _{d(on)}	V _{DD} = -30V, V _{GS} = -10V, R _L = 15Ω, R _G = 3Ω		7		ns
Turn-on Rise Time	t _r			6		
Turn-off Delay Time	t _{d(off)}			12		
Turn-off Fall Time	t _f			7		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = -2.0A			-1.2	V

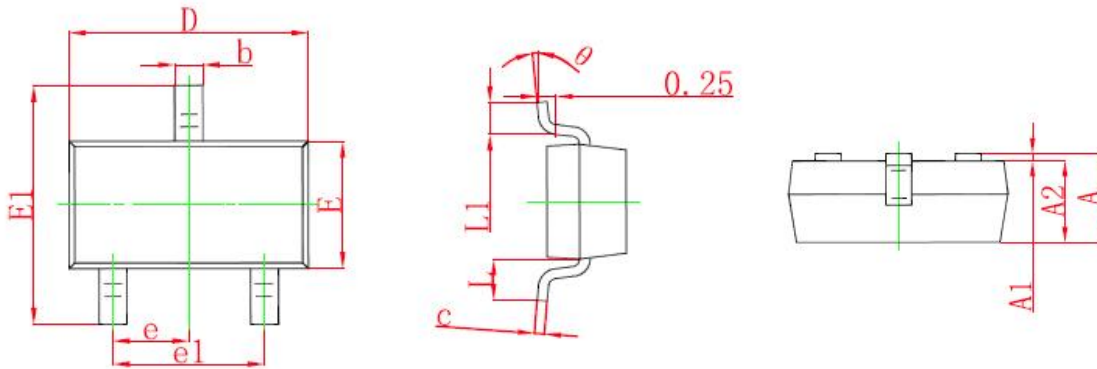
Notes :

- 1.The maximum current rating is limited by Chip.
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 4.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.
- 5.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics

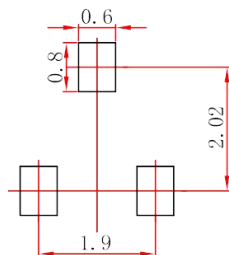


SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

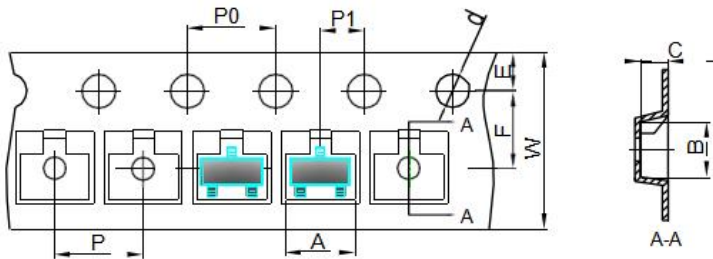
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SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape



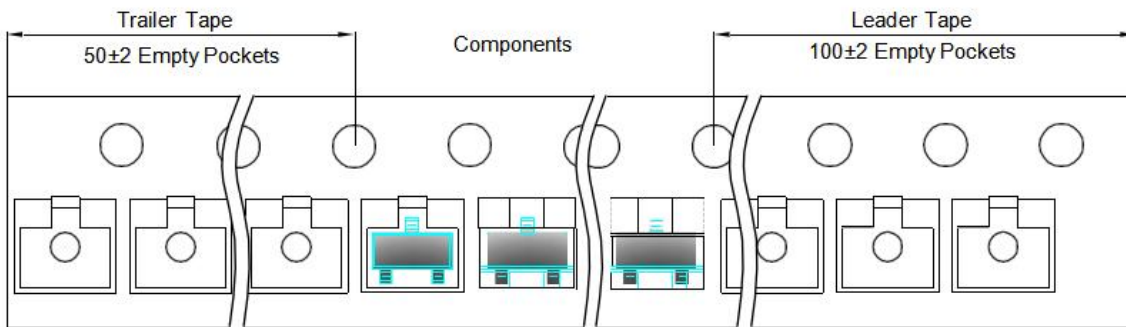
Packaging Description:

SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

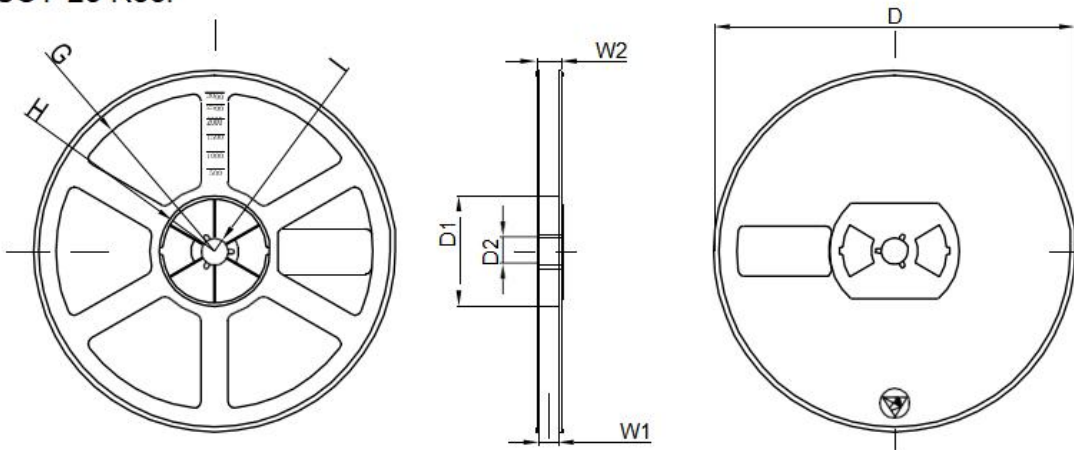
Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	

Date of change	Rev #	revise content
2023/4/27	A/0	/