

20V N-Channel MOSFET

PRIMARY CHARACTERISTICS

BV_{DSS}	$R_{DS(ON)MAX}$	I_D
20V	61mΩ@VGS=4.5V	3A
	77mΩ@VGS=2.5V	

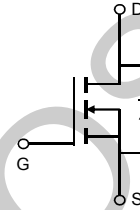
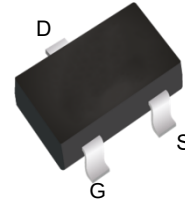
Features

- 20V, 3A, $R_{DS(ON)} < 61mΩ$ @ VGS=4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

Mechanical Data

- Package: SOT-23
- Marking: 2302
- Packing: Tape & Reel, 3000 units/reel

SOT-23



Applications

- Load Switch
- PWM Application
- Power Management

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
DCM2302F	SOT-23	2302	7" Tape&Reel	3,000

Maximum Ratings (@ $T_A = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	20V	V
Gate - Source Voltage	V_{GS}	±12V	V
Continuous Drain Current ($V_{GS} = 4.5V$) ⁽¹⁾	I_D	3	A
	I_D	2	A
Pulsed Drain Current ⁽²⁾	I_{DM}	12	A
Power Dissipation	P_D	1.2	W
Junction & Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	°C

Thermal Characteristics

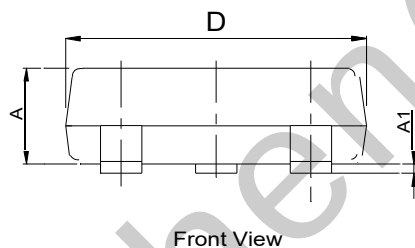
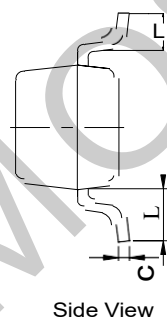
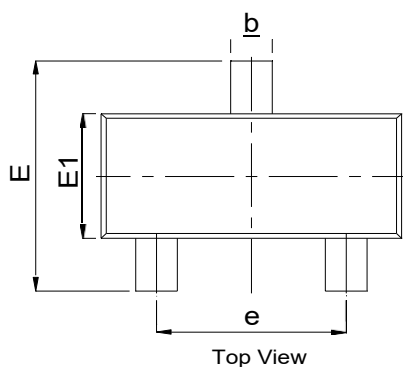
Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ⁽³⁾	$R_{\theta JA}$	-	103	°C/W

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics ⁽⁴⁾						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	VGS = 0V, ID = 250μA	20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	VDS = 20V, VGS = 0V,TJ=25°C	-	-	1.0	μA
Gate-Source Leakage Current	I _{GSS}	VGS = ±12V, VDS = 0V	-	-	±100	nA
On Characteristics ⁽⁴⁾						
Gate Threshold Voltage	V _{GS(th)}	-, VDS = VGS, ID = 250μA	0.5	0.75	1.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	VGS = 2.5V, ID = 2A	-	56	77	mΩ
		VGS = 4.5V, ID = 3A	-	42	61	mΩ
Diodes Forward Voltage	V _{SD}	IS = 3A, VGS = 0V	-	-	1.2	V
Dynamic Characteristics ⁽⁴⁾						
Input Capacitance	C _{ISS}	VDS = 10V, VGS = 0V, f = 1MHz	-	157	-	pF
Output Capacitance	C _{OSS}		-	25	-	pF
Reverse Transfer Capacitance	C _{RSS}		-	18	-	pF
Switching Characteristics ⁽⁵⁾						
Turn-On DelayTime	t _{d(on)}	VGS = 4.5V, VDD = 10V, ID = 2A, RGEN = 3Ω	-	3	-	ns
Rise Time	t _r		-	11	-	ns
Turn-Off DelayTime	t _{d(off)}		-	20	-	ns
Fall Time	t _f		-	8	-	ns
Gate Charge Characteristics ⁽⁵⁾						
Total Gate Charge	Q _g	VDD = 10V, ID = 2A VGS = 4.5V	-	3	-	nC
Gate-Source Charge	Q _{gs}		-	0.5	-	nC
Gate-Drain Charge	Q _{gd}		-	0.7	-	nC
Drain-Source Diode Characteristics ⁽⁵⁾						
Diode Forward Current	IS	TA = 25°C	-	-	3	A
Maximum Pulsed Drain to Source Diode Forward Current	ISM	TA = 25°C	-	-	12	A
Drain to Source Diode Forward Voltage	VSD	VGS = 0V	-	-	1.2	V
Notes:						
1. This current is chip limited, which is calculated based on Rthja.						
2. This current is calculated on single pulse with 10μs Single Pulse .						
3. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.						
4. Short duration pulse test used to minimize self-heating effect.						
5. Defined by design, not subject to production.						

Outline Drawing

SOT-23

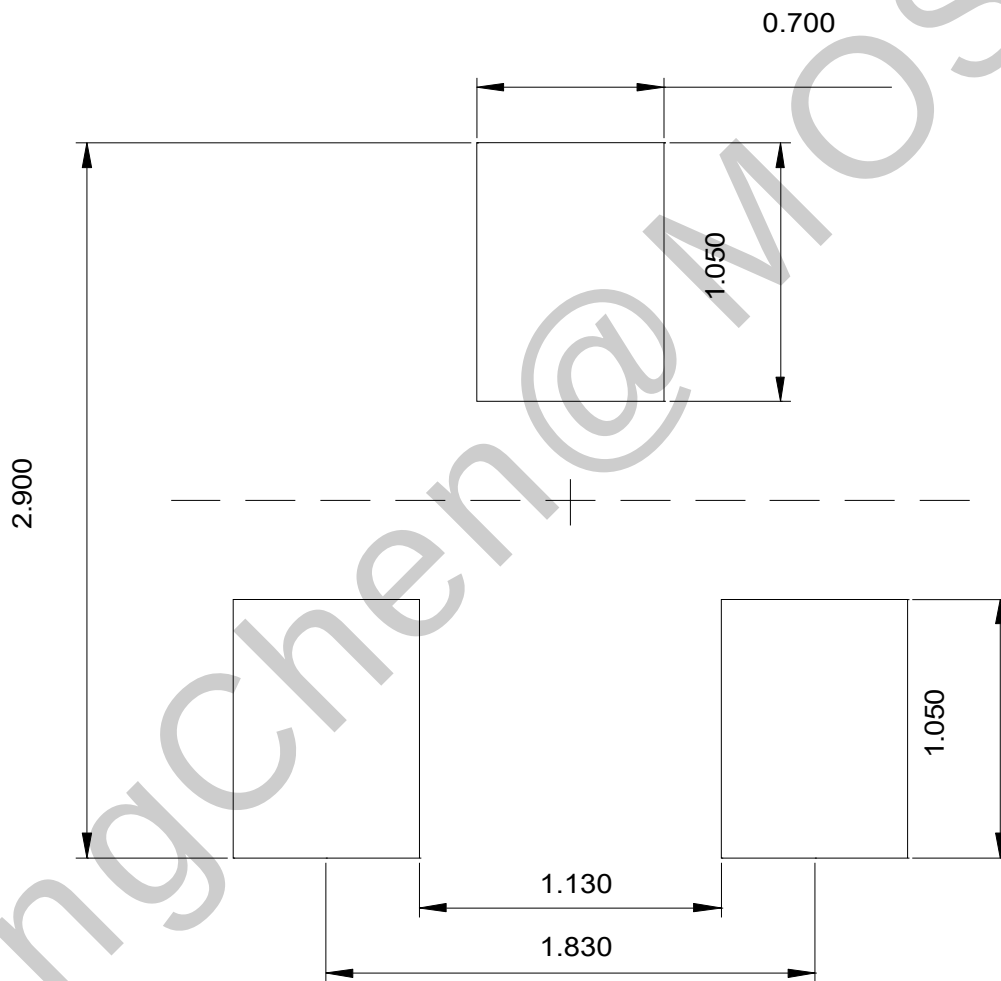


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.10
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
L	0.45	0.55	0.65
L1	0.20	-	0.55
b	0.30	0.40	0.50
c	-	0.10	0.15
e	-	1.90	-

Dimensions in inches and (millimeters)

Suggested Soldering Pad Layout

SOT-23



Dimensions in inches and (millimeters)

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