

N-Channel Enhancement Mode Power MOSFET

Description

The DN8205S uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

- $V_{DS} = 15V, I_D = 6A$
 Typ. $R_{DS(ON)} = 14m\ \Omega$ @ $V_{GS}=4.5V$
 Typ. $R_{DS(ON)} = 22m\ \Omega$ @ $V_{GS}=2.5V$
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

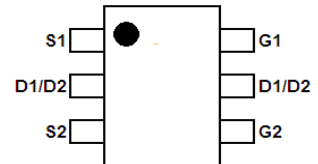
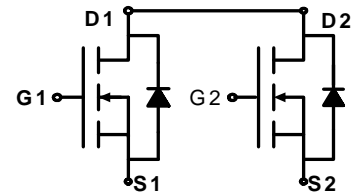
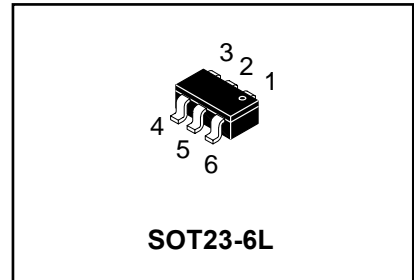
Application

- Battery protection
- Load switch
- Power management

ORDERING INFORMATION

Device	Marking	Shipping
DN8205S	15N	3000/Tape & Reel

DN8205S



Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	15	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	I_D	6	A
Drain Current-Pulsed (Note 1)	I_{DM}	25	A
Maximum Power Dissipation	P_D	1.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient ^(Note 2)	$R_{\theta JA}$	83	$^\circ C/W$
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Electrical Characteristics (T_A=25°C unless otherwise noted)

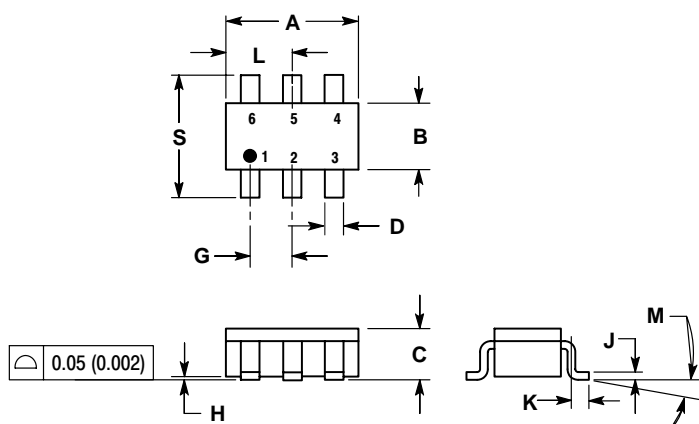
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	15	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =14V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5	0.7	1	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =4.5A	-	14	17	mΩ
		V _{GS} =2.5V, I _D =3.5A	-	22	28	mΩ
		V _{GS} =4.5V, I _D =6A	-	-	22	mΩ
		V _{GS} =2.5V, I _D =5A	-	-	35	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =4.5A	-	10	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, F=1.0MHz	-	900	-	PF
Output Capacitance	C _{oss}		-	220	-	PF
Reverse Transfer Capacitance	C _{rss}		-	100	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, I _D =1A V _{GS} =4.5V, R _{GEN} =6Ω	-	10	20	nS
Turn-on Rise Time	t _r		-	11	25	nS
Turn-Off Delay Time	t _{d(off)}		-	35	70	nS
Turn-Off Fall Time	t _f		-	30	60	nS
Total Gate Charge	Q _g	V _{DS} =10V, I _D =6A, V _{GS} =4.5V	-	12	15	nC
Gate-Source Charge	Q _{gs}		-	2.3	-	nC
Gate-Drain Charge	Q _{gd}		-	1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =1.0A	-	0.75	1.5	V
Diode Forward Current (Note 2)	I _S		-	-	1.0	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production



SOT23-6L



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.90	3.10	0.1142	0.1220
B	1.30	1.70	0.0512	0.0669
C	0.90	1.10	0.0354	0.0433
D	0.25	0.50	0.0098	0.0197
G	0.85	1.05	0.0335	0.0413
H	0.013	0.100	0.0005	0.0040
J	0.10	0.26	0.0040	0.0102
K	0.20	0.60	0.0079	0.0236
L	1.25	1.55	0.0493	0.0610
M	0°	10°	0°	10°
S	2.50	3.00	0.0985	0.1181

