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SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

DMG2305UX-7-MS

Product specification

Description

The DMG2305UX-7-MS is the high cell density trench P-ch MOSFETS, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The DMG2305UX-7-MS meet the RoHS and Green Product requirement with full function reliability approved.

General Features

VDS = -20V, ID = -4A


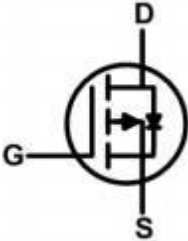
RDS(ON) < 45mΩ @ VGS=-4.5V

RDS(ON) < 63mΩ @ VGS=-2.5V

Application

- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Reference News

PACKAGE OUTLINE	P-Channel MOSFET	Marking
		<div style="background-color: black; color: white; padding: 10px; text-align: center; width: 100px; margin: 0 auto;">A5SHB</div>
<p style="text-align: center;">SOT- 23</p>		

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-20	V
VGS	Gate-Source Voltage	±12	V
ID@TA=25C	Continuous Drain Current, VGS @ -4.5V ¹	-4.0	A
ID@TA=70C	Continuous Drain Current, VGS @ -4.5V ¹	-3.0	A
IDM	Pulsed Drain Current ²	-16	A
PD@TA=25C	Total Power Dissipation ³	1.31	W
PD@TA=70C	Total Power Dissipation ³	0.84	W
TSTG	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
RθJA	Thermal Resistance Junction-Ambient 1	---	125	°C/W
RθJA	Thermal Resistance Junction-Ambient 1 (t ≤ 10s)	---	---	°C/W

Electrical Characteristics (TJ=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = -250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -20V, V _{GS} =0V,	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ± 12V	-	-	± 100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	-0.4	-0.7	-1.0	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} = -4.5V, I _D = -4.1A	-	35	45	mΩ
		V _{GS} = -2.5V, I _D = -3A	-	43	63	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -10V, V _{GS} =0V, f=1.0MHz	-	830	-	pF
C _{oss}	Output Capacitance		-	132	-	
C _{rss}	Reverse Transfer Capacitance		-	85	-	
Q _g	Total Gate Charge	V _{DS} = -10V, I _D = -2A, V _{GS} = -4.5V	-	8.8	-	nC
Q _{gs}	Gate-Source Charge		-	1.4	-	
Q _{gd}	Gate-Drain("Miller") Charge		-	1.9	-	

Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = -10V, I_D = -3.3A,$ $R_G = 1\Omega, V_{GEN} = -4.5V$	-	10	-	ns
t_r	Turn-on Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	50	-	ns
t_f	Turn-off Fall Time		-	51	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4.0	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-16	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = -4.1A$	-	-	-1.2	V

- Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
 2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

Figure 1: Output Characteristics

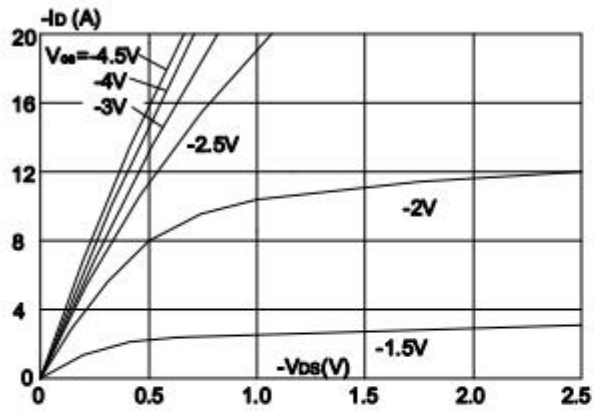


Figure 2: Typical Transfer Characteristics

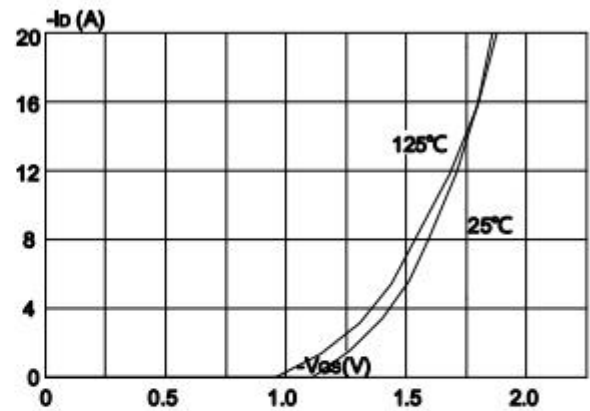


Figure 3: On-resistance vs. Drain Current

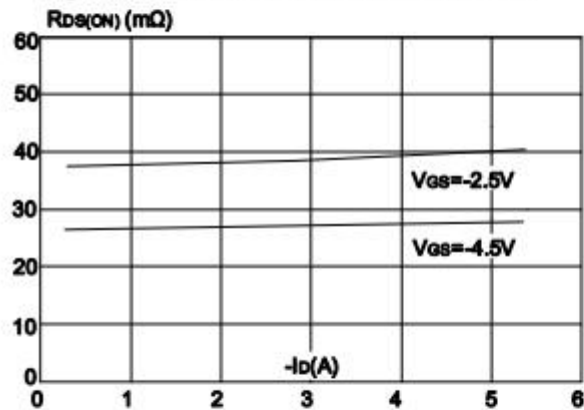


Figure 4: Body Diode Characteristics

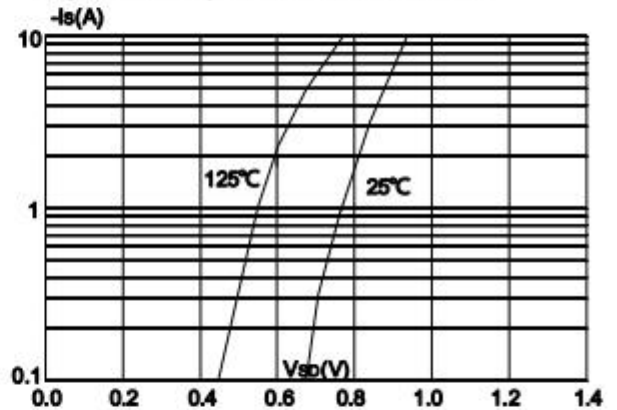


Figure 5: Gate Charge Characteristics

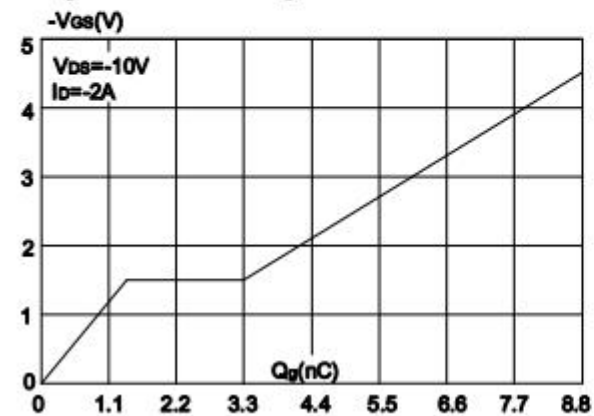


Figure 6: Capacitance Characteristics

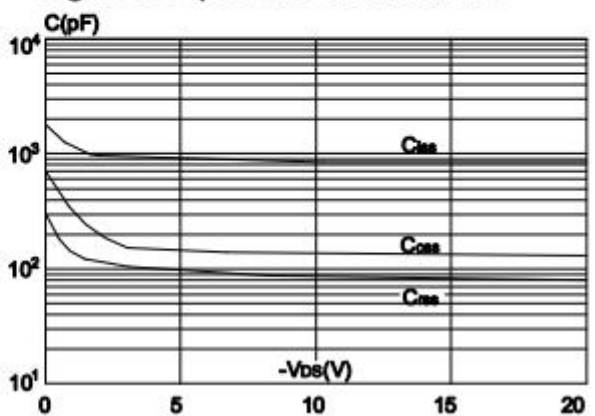


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

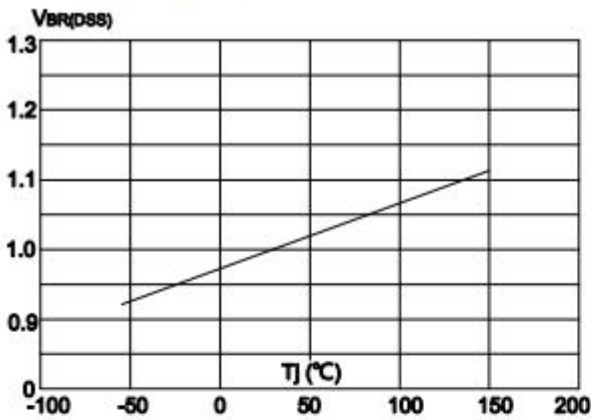


Figure 8: Normalized on Resistance vs. Junction Temperature

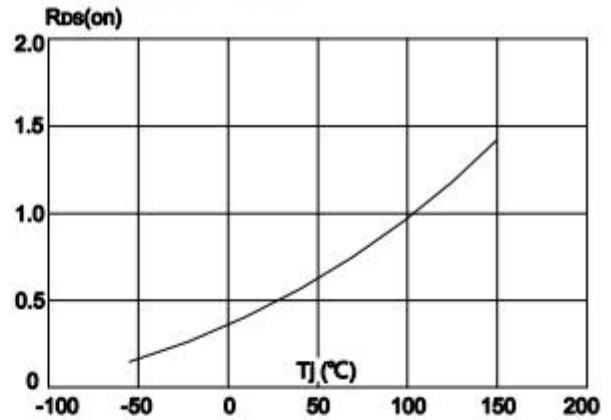


Figure 9: Maximum Safe Operating Area

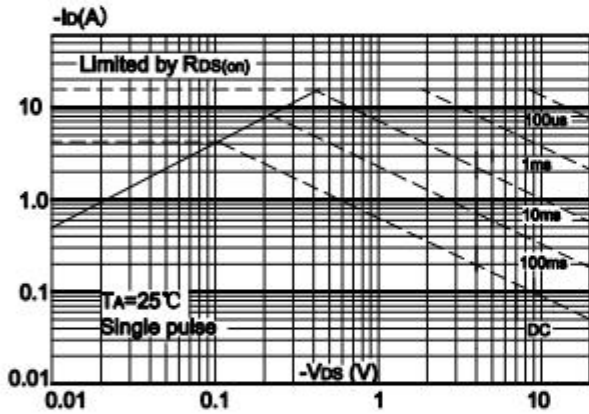


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

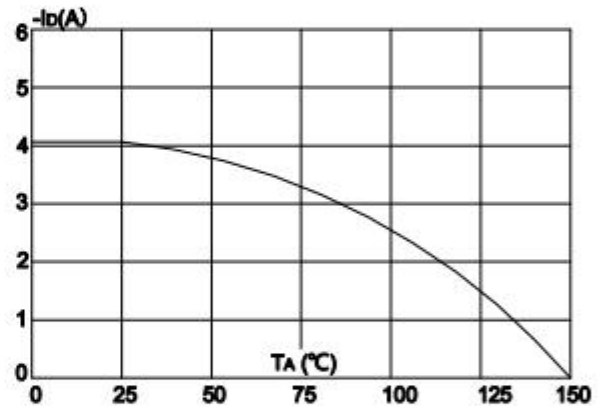
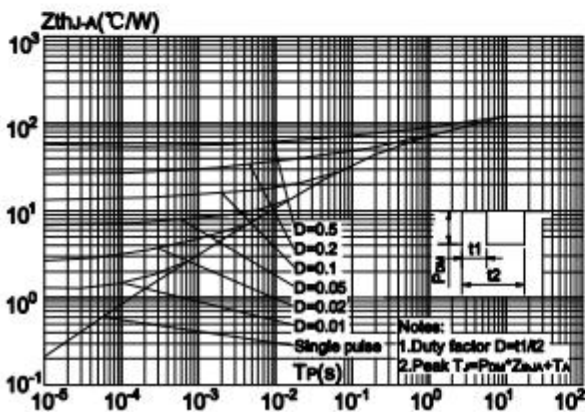
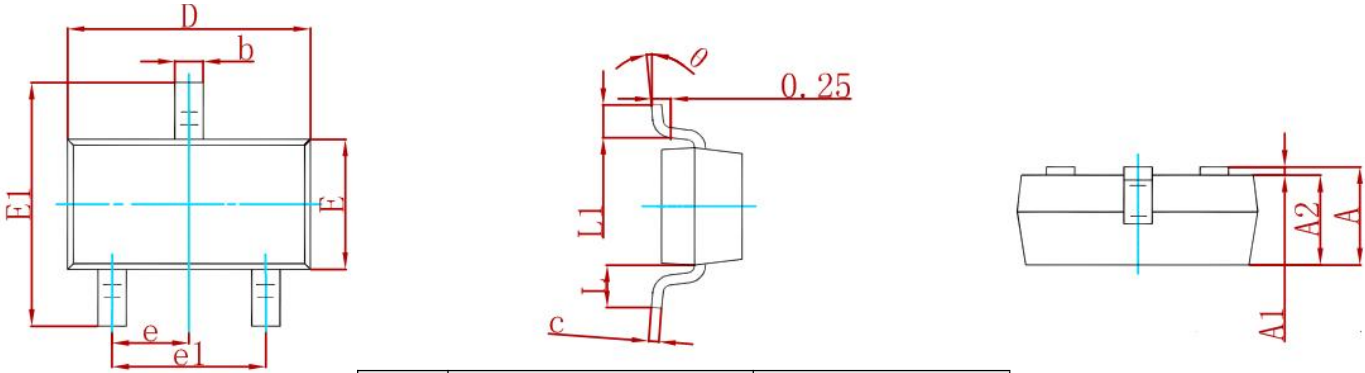


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

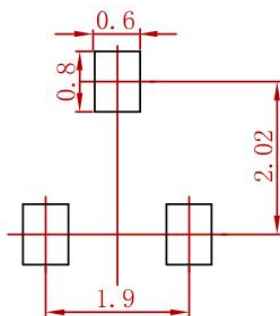


PACKAGE MECHANICAL DATA



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°

Suggested Pad Layout



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

REEL SPECIFICATION

P/N	PKG	QTY
DMG2305UX-7-MS	SOT-23	3000

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