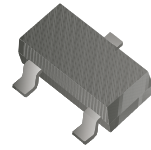


CMS2305A-HF

P-Channel
RoHS Device
Halogen Free



V(BR)DSS	RDS(on)MAX	ID
-30V	80mΩ @ -4.5V	-3.2A
	150mΩ @ -2.5V	

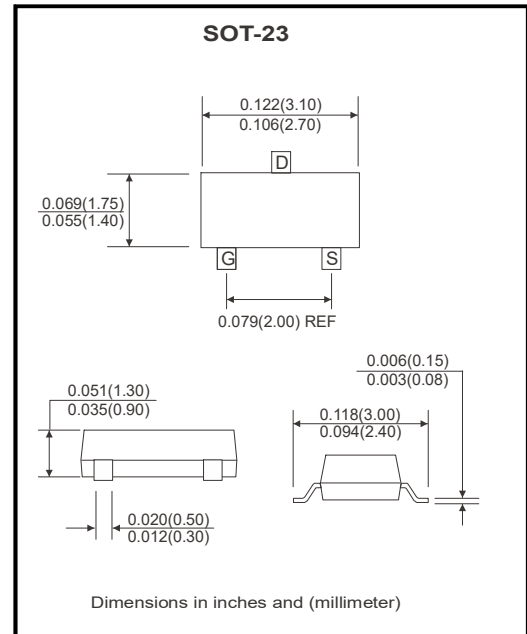
Features

- Super High Dense Cell Design for Extremely Low R_{DS(ON)}
- Load Switch for Portable Devices.
- DC/DC Converter.

Description

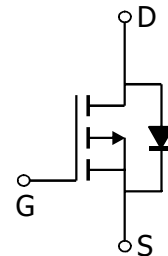
The CMS2305A utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device. The device is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

The CMS2305A meet the RoHS and Green Product requirement with full function reliability approved.



Circuit diagram

- G : Gate
- S : Source
- D : Drain



Maximum Ratings (at Ta=25 °C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current ³	I _D @T _A =25°C	-3.2	A
	I _D @T _A =70°C	-2.6	A
Pulsed Drain Current ^{1,2}	I _{DM} @T _A =25°C	-10	A
Total Power Dissipation	P _D @T _A =25°C	1.38	W
Linear Derating Factor	-	0.01	W/°C
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Max. Value	Unit
Thermal Resistance Junction-ambient ³	R _{θJA}	90	°C/W

Electrical Characteristics (at TA=25°C unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$V_{GS}=0, I_D=-250\mu A$
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	-	-0.1	-	V/°C	Reference to 25°C, $I_D=-1mA$
Gate Threshold Voltage	$V_{GS(th)}$	-0.5	-	-1.2	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
Forward Transconductance	g_{fs}	-	9	-	S	$V_{DS}=-5V, I_D=-3A$
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	$V_{GS}=\pm 12V$
Drain-Source Leakage Current($T_J=25^\circ C$)	I_{DSS}	-	-	-1	μA	$V_{DS}=-24V, V_{GS}=0$
Drain-Source Leakage Current($T_J=70^\circ C$)		-	-	-25		$V_{DS}=-24V, V_{GS}=0$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	-	60	mΩ	$V_{GS}=-10V, I_D=-3.2A$
		-	-	80		$V_{GS}=-4.5V, I_D=-3.0A$
		-	-	150		$V_{GS}=-2.5V, I_D=-2.0A$
		-	-	250		$V_{GS}=-1.8V, I_D=-1.0A$
Total Gate Charge ²	Q_g	-	10	-	nC	$I_D=-3.2A$
Gate-Source Charge	Q_{gs}	-	1.8	-		$V_{DS}=-24V$
Gate-Drain ("Miller") Charge	Q_{gd}	-	3.6	-		$V_{GS}=-4.5V$
Turn-on Delay Time ²	$T_{d(on)}$	-	7	-	ns	$V_{DS}=-15V$
Rise Time	T_r	-	15	-		$I_D=-3.2A$
Turn-off Delay Time	$T_{d(off)}$	-	21	-		$V_{GS}=-10V$
Fall Time	T_f	-	15	-		$R_G=3.3\Omega$ $R_D=4.6\Omega$
Input Capacitance	C_{iss}	-	735	-	pF	$V_{GS}=0V$
Output Capacitance	C_{oss}	-	100	-		$V_{DS}=-25V$
Reverse Transfer Capacitance	C_{rss}	-	80	-		$f=1.0MHz$

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Diode Forward Voltage ²	V_{SD}	-	-	-1.2	V	$I_S=-1.2A, V_{GS}=0V, T_J=25^\circ C$
Reverse Recovery Time	t_{rr}	-	24	-	ns	$I_F=-3.2A, V_{GS}=0V$
Reverse Recovery Charge	Q_{rr}	-	19	-	nC	$dI/dt=100A/\mu s,$

Notes: 1. Pulse width limited by Max. junction temperature.

2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

3. Surface mounted on 1 in² copper pad of FR4 board; 270 °C/W when mounted on min. copper pad.

RATING AND CHARACTERISTIC CURVES (CMS2305A-HF)

TYPICAL CHARACTERISTIC

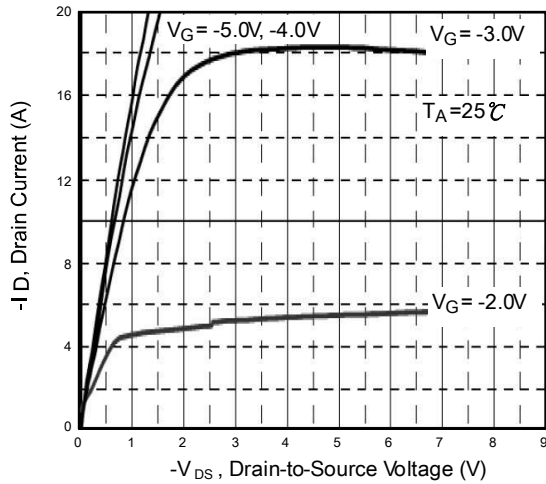


Fig.1 Typical Output Characteristics

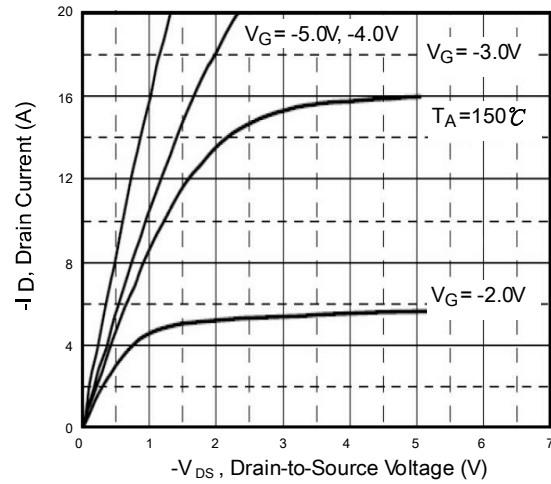


Fig.2 Typical Output Characteristics

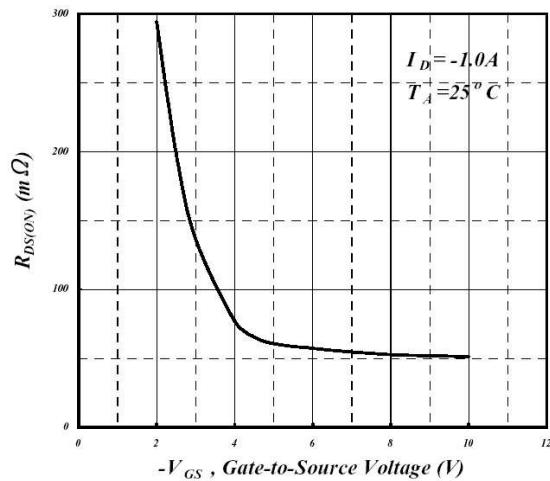


Fig.3 On-Resistance vs. Gate Voltage

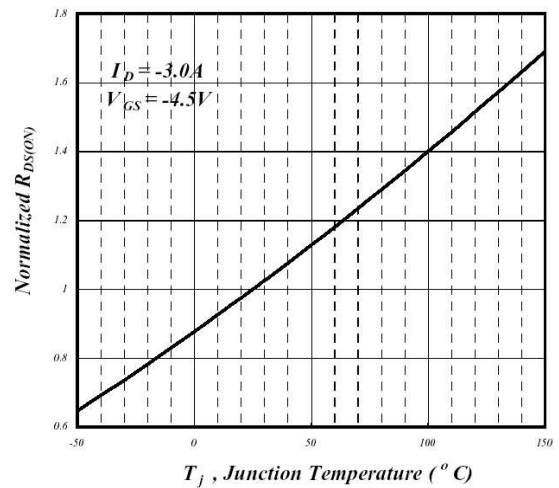


Fig.4 Normalized $R_{DS(on)}$ vs. T_J

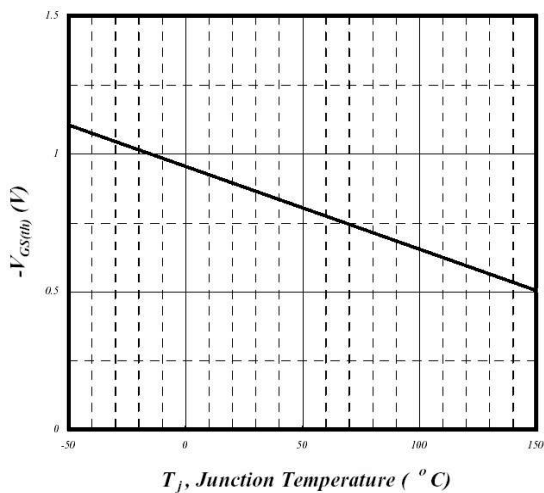


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

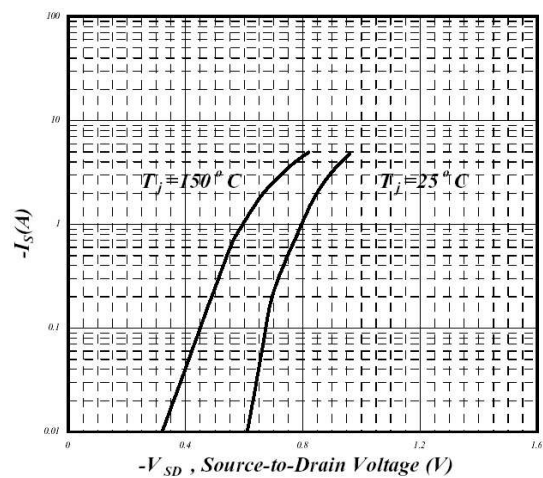


Fig.6 Forward Characteristics of Reverse

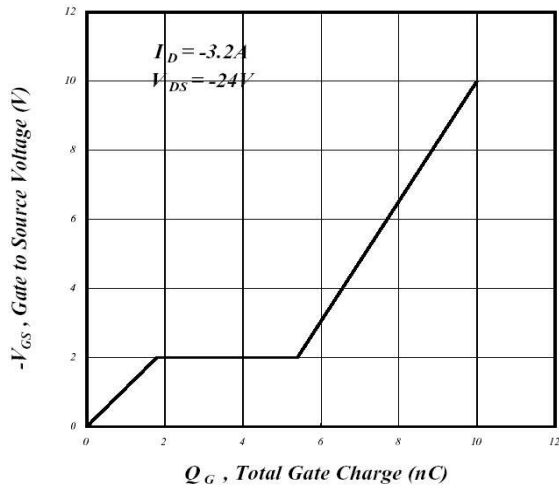


Fig.7 Gate Charge Characteristics

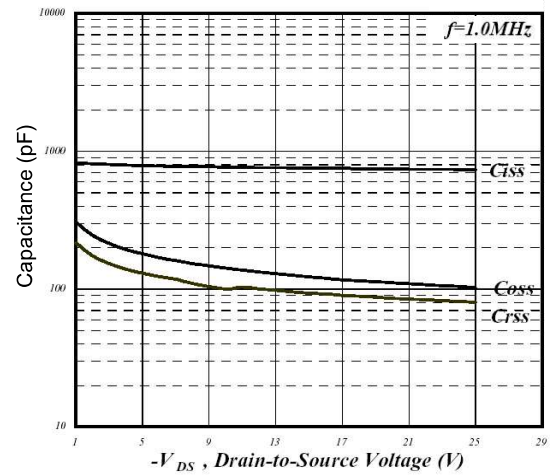


Fig.8 Capacitance Characteristics

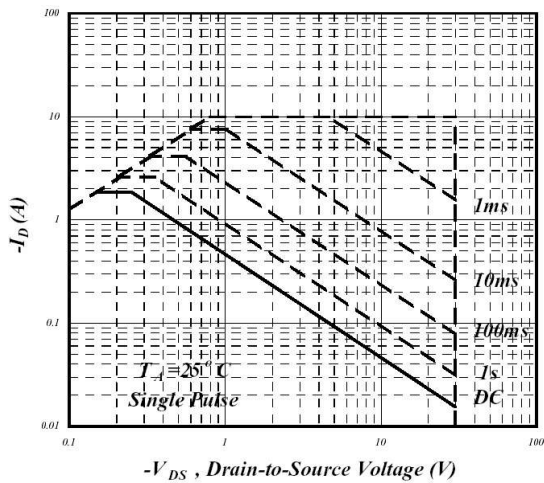


Fig.9 Safe Operating Area

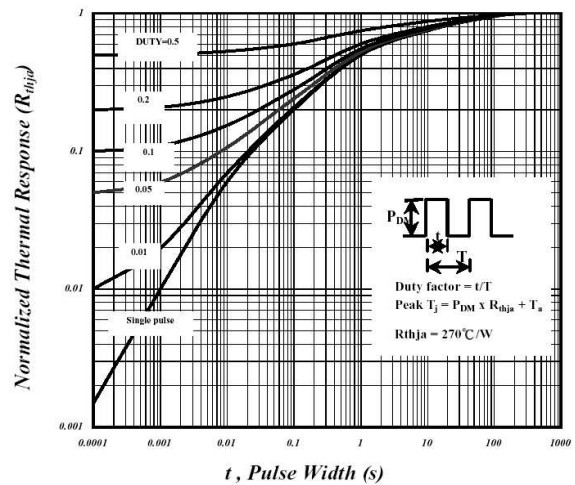


Fig.10 Transient Thermal Impedance

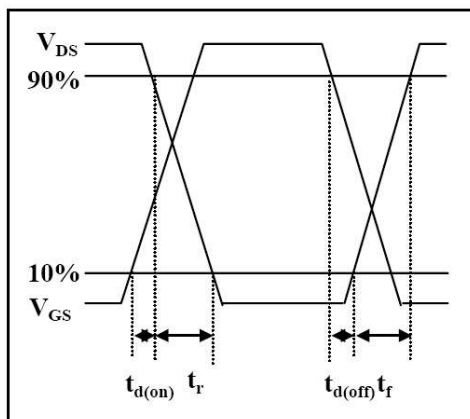


Fig.11 Switching Time Waveform

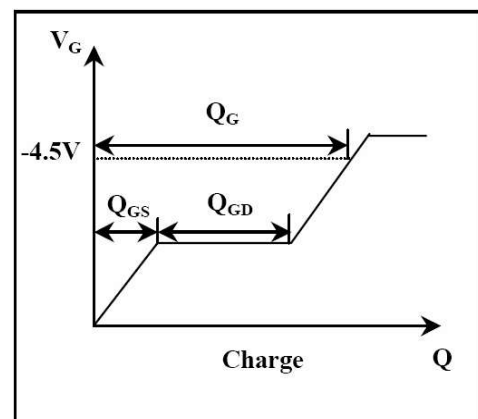
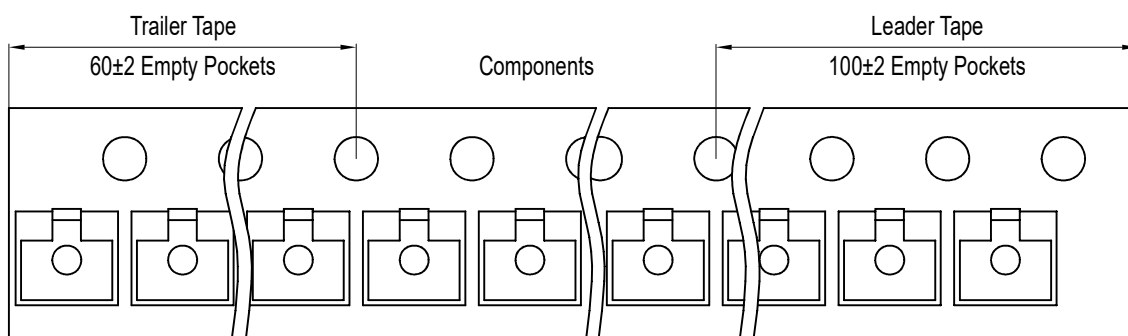
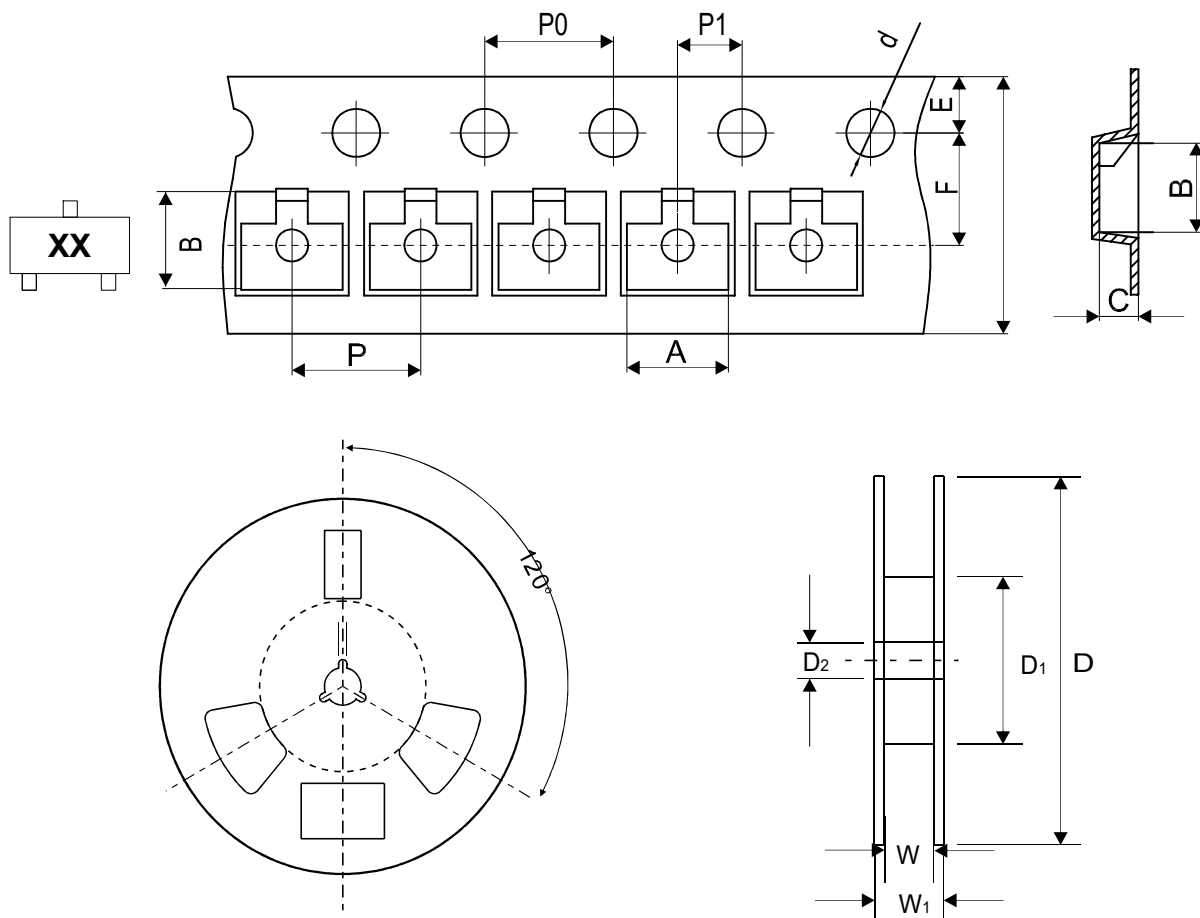


Fig.12 Gate Charge Waveform

Reel Taping Specification

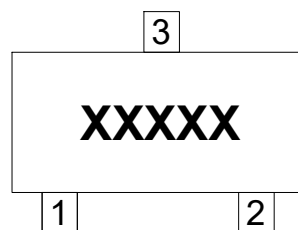


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.10 ± 0.10	3.20 ± 0.10	1.37 ± 0.10	1.50 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.122 ± 0.004	0.126 ± 0.004	0.054 ± 0.004	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

SOT-23	SYMBOL	E	F	P	P_0	P_1	W	W_1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	$8.40 + 1.50 / - 0.50$	12.00 ± 1.50
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	$0.330 + 0.012 / - 0.004$	0.472 ± 0.039

Marking Code

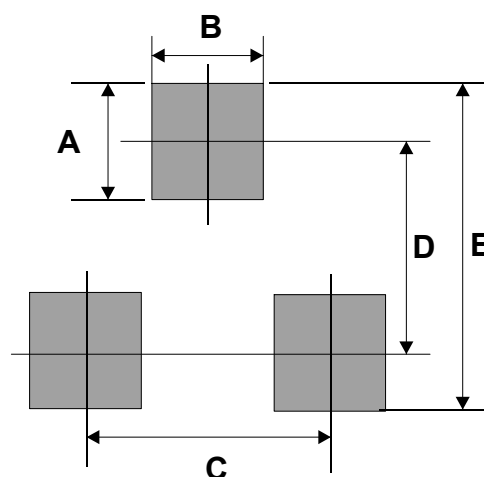
Part Number	Marking Code
CMS2305A-HF	2305A



xxxxxx = Product type marking code

Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	0.60	0.024
C	1.90	0.075
D	2.37	0.093
E	3.17	0.124



Standard Packaging

Case Type	Qty Per Reel	Reel Size
	(Pcs)	(inch)
SOT-23	3,000	7