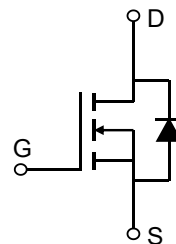


### Description

#### Features

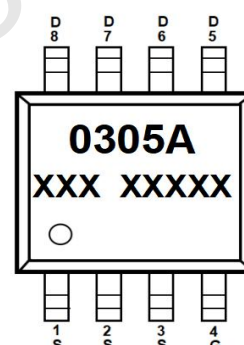
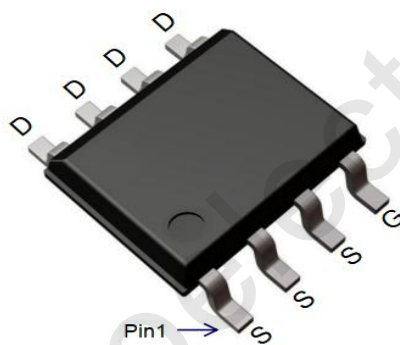
- 30V, 20A
- $R_{DS(ON)}$  Typ = 4mΩ @  $V_{GS} = 10V$
- $R_{DS(ON)}$  Typ = 5.3mΩ @  $V_{GS} = 4.5V$
- Advanced Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead Free
- 100% UIS TESTED!



Schematic Diagram

#### Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

#### Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
CRMPTL0305A	0305A	SOP-8	TAPING	13"	4000	40000

#### Absolute Maximum Ratings (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Units	
V <sub>DS</sub>	Drain-to-Source Voltage	30	V	
V <sub>GS</sub>	Gate-to-Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current	T <sub>A</sub> = 25°C	20	A
		T <sub>A</sub> = 100°C	12	A
I <sub>DM</sub>	Pulsed Drain Current <sup>(1)</sup>	80	A	
E <sub>AS</sub>	Single Pulsed Avalanche Energy <sup>(2)</sup>	105	mJ	
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> = 25°C	3.7	W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient <sup>(3)</sup>	33.8	°C/W	
T <sub>J</sub> , T <sub>STG</sub>	Junction & Storage Temperature Range	-55 to 150	°C	

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V	30	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V	-	-	1.0	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
On Characteristics						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1	1.5	2	V
R <sub>DS(ON)</sub>	Static Drain-Source ON-Resistance <sup>(4)</sup>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A	-	4	5.2	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10A	-	5.3	6.9	mΩ
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz	-	2400	-	pF
C <sub>oss</sub>	Output Capacitance		-	263	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	200	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = 0 to 10V V <sub>DS</sub> = 15V, I <sub>D</sub> = 30A	-	42	-	nC
Q <sub>gs</sub>	Gate Source Charge		-	9	-	nC
Q <sub>gd</sub>	Gate Drain("Miller") Charge		-	10	-	nC
Switching Characteristics						
t <sub>d(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 15V I <sub>D</sub> = 30A, R <sub>GEN</sub> = 3Ω	-	9	-	ns
t <sub>r</sub>	Turn-On Rise Time		-	15	-	ns
t <sub>d(off)</sub>	Turn-Off DelayTime		-	36	-	ns
t <sub>f</sub>	Turn-Off Fall Time		-	11	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	20	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	80	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> = 0V, I <sub>S</sub> = 20A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I <sub>F</sub> = 20A, di/dt = 100A/us	-	11	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	2.5	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
  2.  $E_{AS}$  condition: Starting  $T_J = 25^\circ\text{C}$ ,  $V_{DD} = 15\text{V}$ ,  $V_G = 10\text{V}$ ,  $R_G = 25\text{ohm}$ ,  $L = 0.5\text{mH}$ ,  $I_{AS} = 20.5\text{A}$
  3.  $R_{\theta JA}$  is measured with the device mounted on a 1inch<sup>2</sup> pad of 2oz copper FR4 PCB
  4. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 0.5\%$ .

## Test Circuit

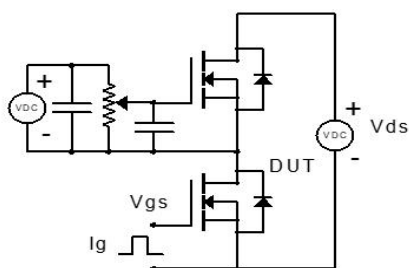


Figure 1: Gate Charge Test Circuit & Waveform

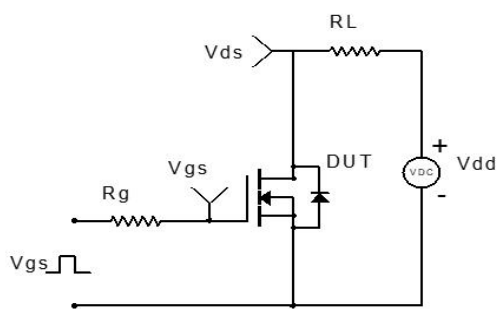


Figure 2: Resistive Switching Test Circuit & Waveform

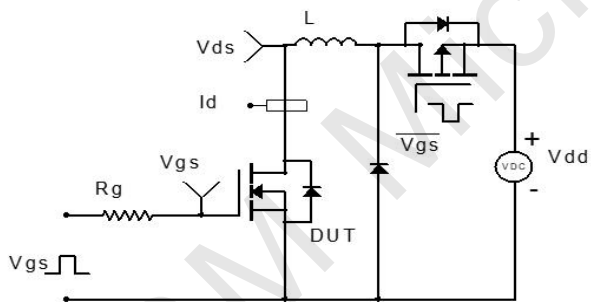


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

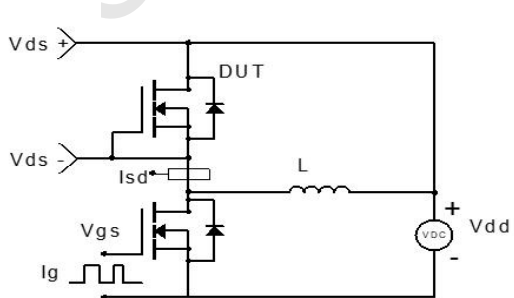
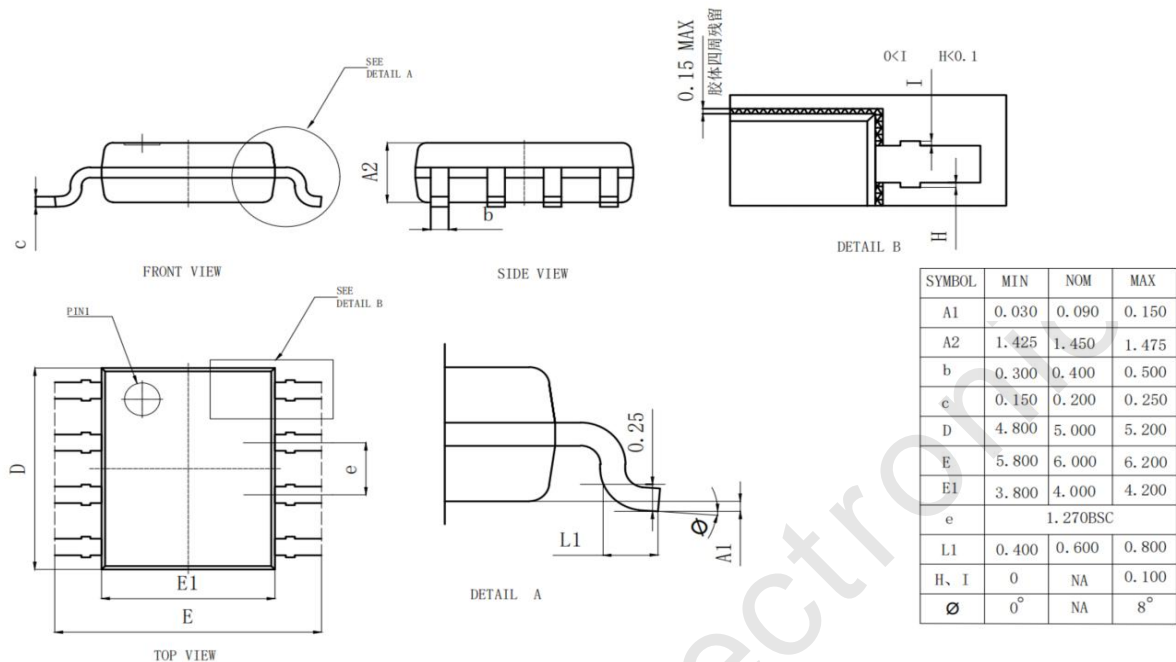


Figure 4: Diode Recovery Test Circuit & Waveform

### Package Mechanical Data(SOP-8)




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