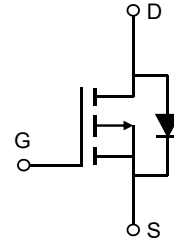


Description

Features

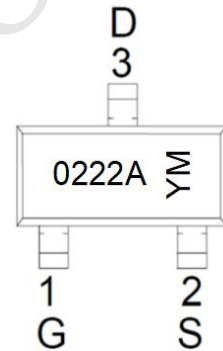
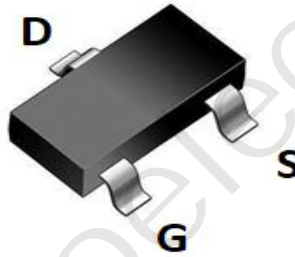
- -20V, -7A
- $R_{DS(ON)}$ Typ = 16.5mΩ @ $V_{GS} = -4.5V$
- $R_{DS(ON)}$ Typ = 21.5mΩ @ $V_{GS} = -2.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free



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)
CRMJBU0222A	0222A	SOT-23-3L	TAPING	7"	3000	120000

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

Symbol	Parameter	Value	Units	
V _{DS}	Drain-to-Source Voltage	-20	V	
V _{GS}	Gate-to-Source Voltage	±12	V	
I _D	Continuous Drain Current	T _A = 25°C	-7	A
		T _A = 100°C	-5	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	-28	A	
P _D	Power Dissipation	T _A = 25°C	2	W
R _{θJA}	Thermal Resistance, Junction to Ambient ⁽²⁾	62.5	°C/W	
T _J , T _{STG}	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

$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -20\text{V}$, $V_{GS} = 0\text{V}$	-	-	-1.0	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 12\text{V}$	-	-	± 100	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	-0.4	-0.62	-1	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽³⁾	$V_{GS} = -4.5\text{V}$, $I_D = -5\text{A}$	-	16.5	21	mΩ
		$V_{GS} = -2.5\text{V}$, $I_D = -3\text{A}$	-	21.5	27	mΩ

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$, $V_{DS} = -10\text{V}$, $f = 1\text{MHz}$	-	1332	-	pF
C_{oss}	Output Capacitance		-	184	-	pF
C_{rss}	Reverse Transfer Capacitance		-	162	-	pF
Q_g	Total Gate Charge	$V_{GS} = 0 \text{ to } -4.5\text{V}$ $V_{DS} = -10\text{V}$, $I_D = -3\text{A}$	-	15	-	nC
Q_{gs}	Gate Source Charge		-	2.2	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	4.4	-	nC

Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = -4.5\text{V}$, $V_{DD} = -10\text{V}$ $I_D = -7\text{A}$, $R_{GEN} = 2.5\Omega$	-	10	-	ns
t_r	Turn-On Rise Time		-	31	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	28	-	ns
t_f	Turn-Off Fall Time		-	8	-	ns

Drain-Source Diode Characteristics and Max Ratings

I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-7	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-28	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0\text{V}$, $I_S = -5\text{A}$	-	-	-1.2	V

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Typical Performance Characteristics

Figure 1: Output Characteristics

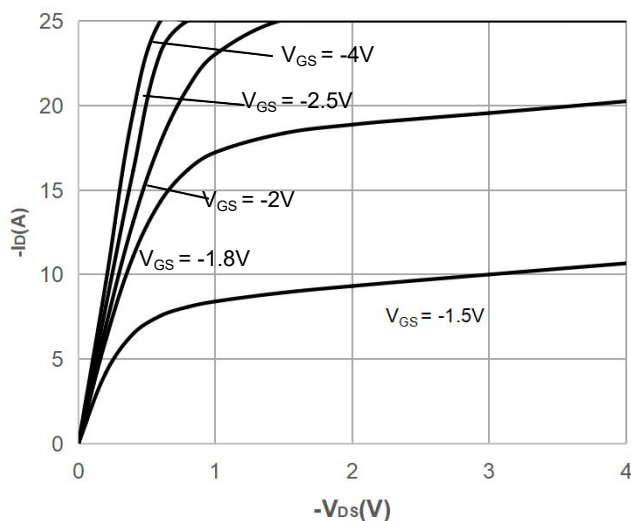


Figure 2: Typical Transfer Characteristics

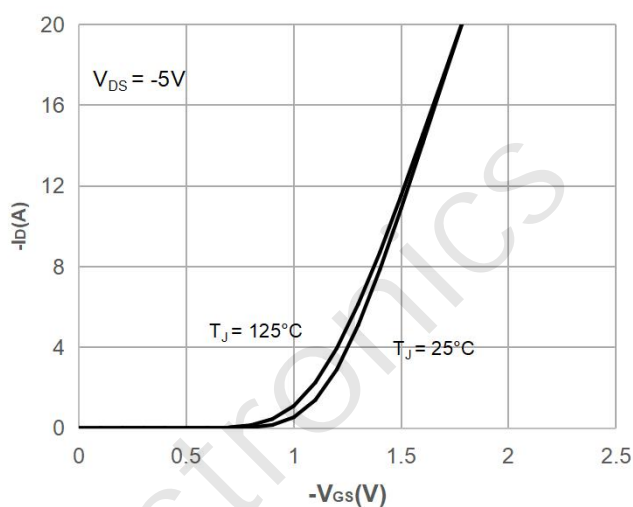


Figure 3: On-resistance vs. Drain Current

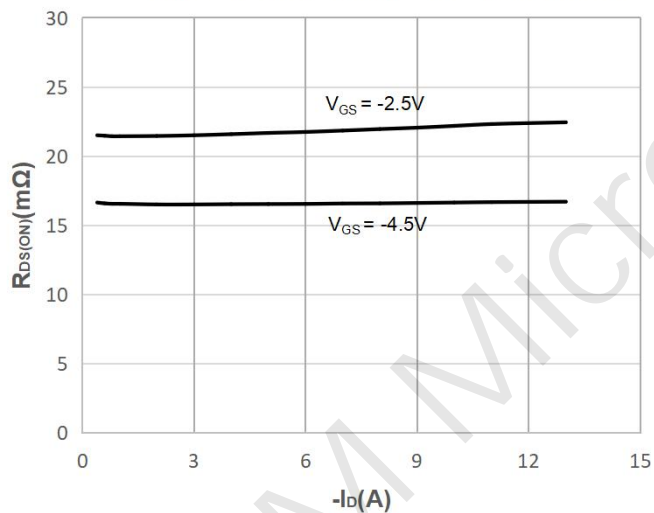


Figure 4: Body Diode Characteristics

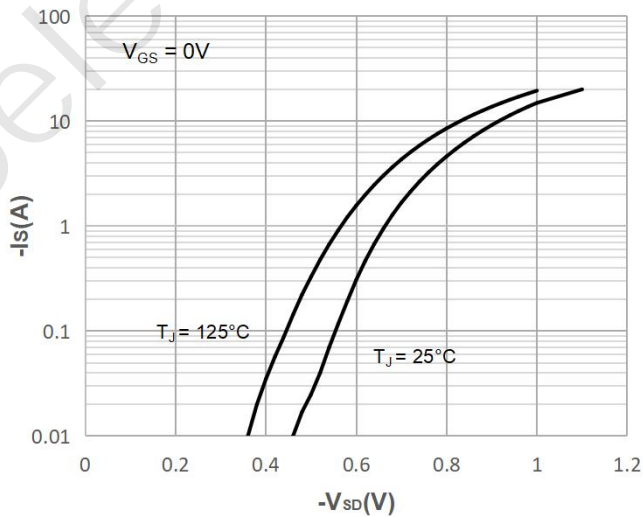


Figure 5: Gate Charge Characteristics

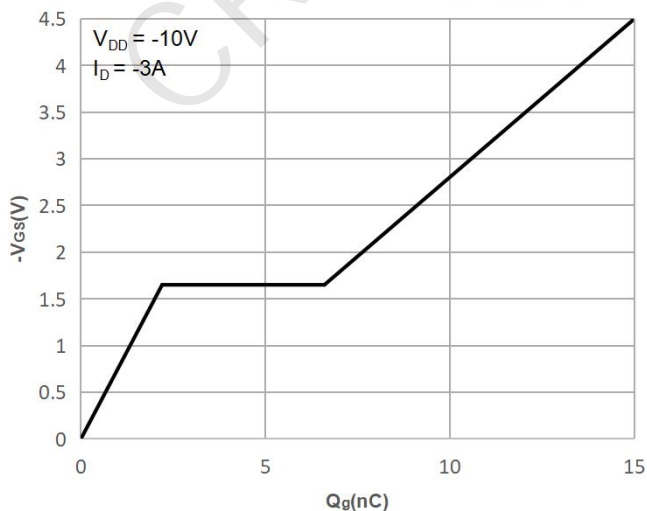
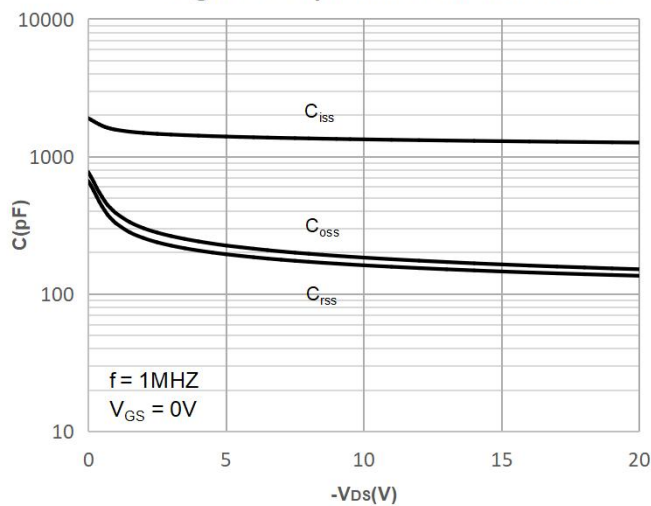


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

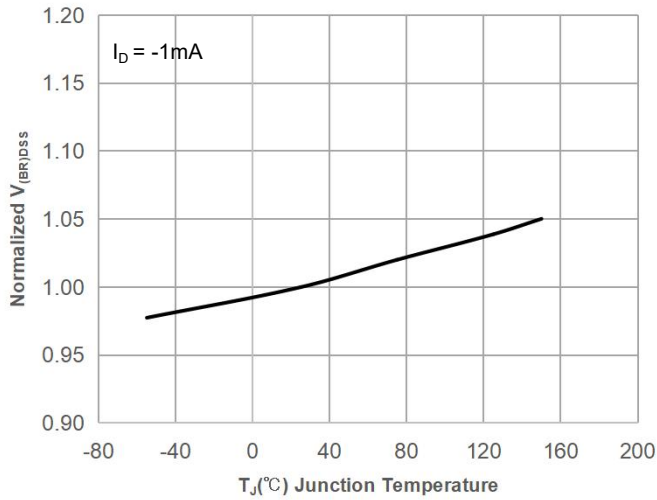


Figure 8: Normalized on Resistance vs. Junction Temperature

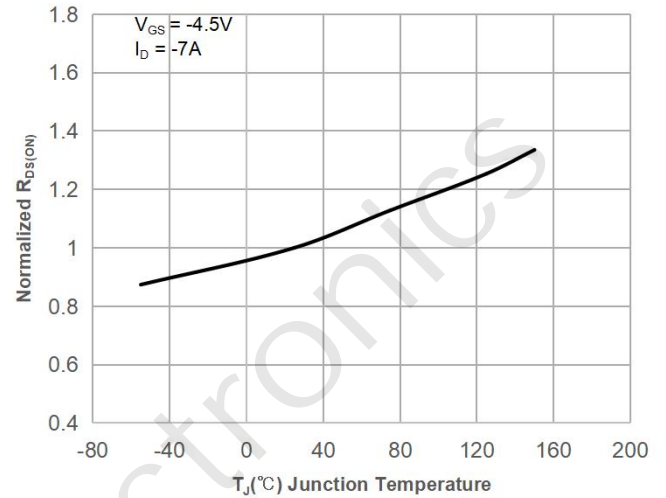


Figure 9: Maximum Safe Operating Area

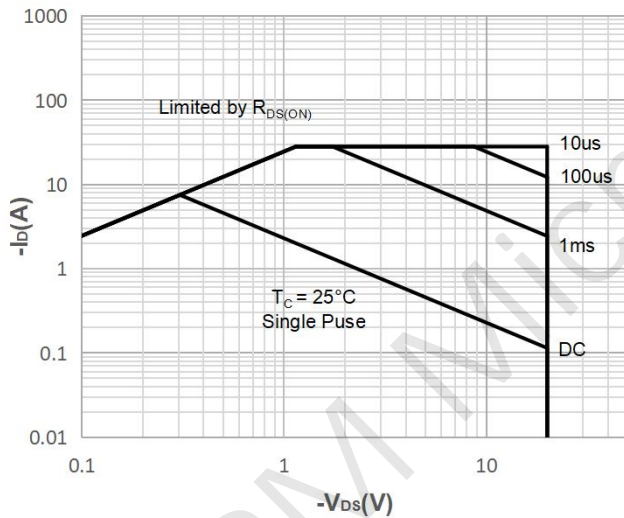


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

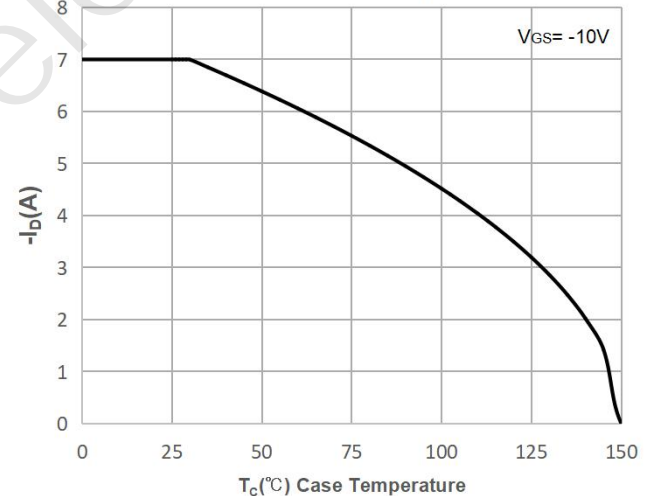


Figure 11: Normalized Maximum Transient Thermal Impedance

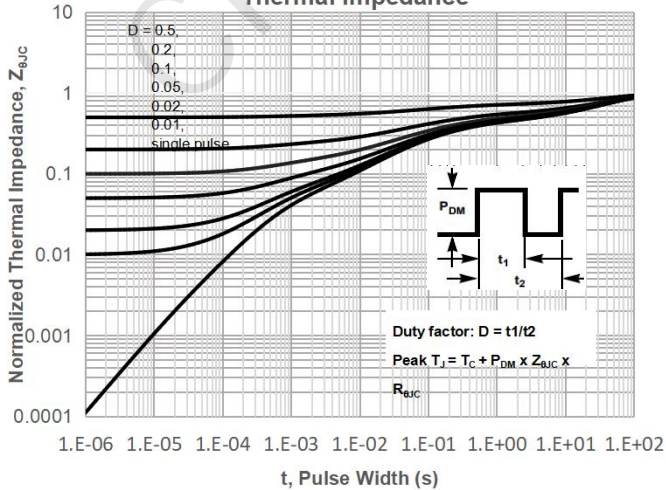
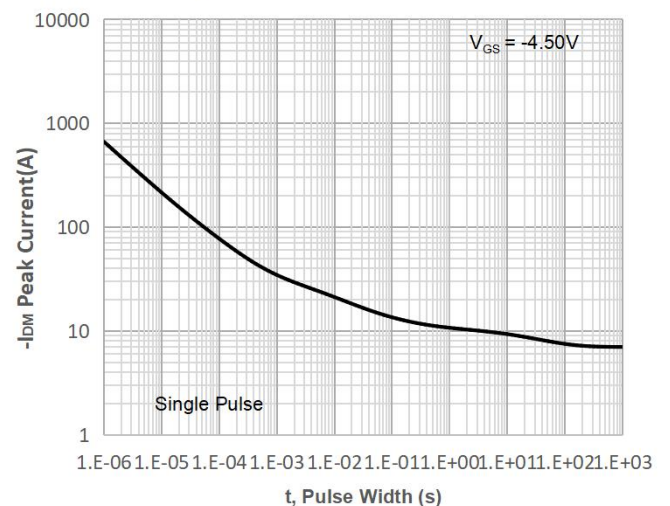


Figure 12: Peak Current Capacity



Test Circuit



Figure 1: Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveform

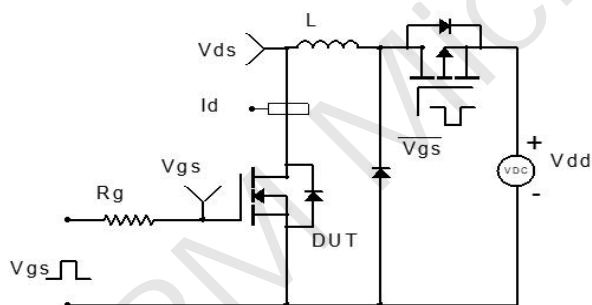
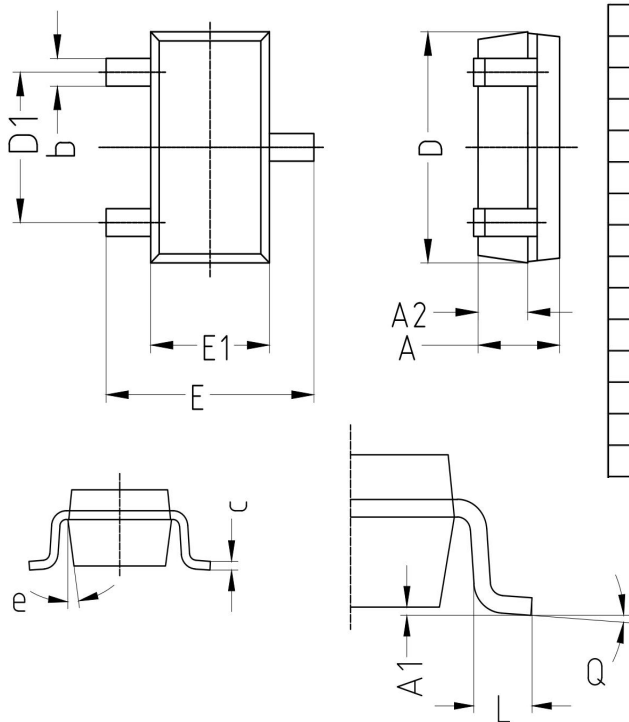


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform



Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(SOT-23-3L)




COMMON DIMENSION (MM)			
SOT-23-3L			
PKG	MIN	MON	MAX
Symbol			
A	1.080	1.100	1.120
A1	0.010	0.060	0.150
A2	0.640	0.670	0.700
b	0.325	0.350	0.375
c	0.125	0.135	0.150
D	2.92	2.930	2.980
D1	1.875	1.900	1.925
E	2.650	2.800	2.950
E1	1.580	1.600	1.670
L	0.300	0.450	0.600
e	8°		
Q	0°	4°	8°

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