Dual P-Channel 20V(D-S) MOSFET

Product summary		
V_{DS}	-20	V
$R_{DS(ON)}$(at V_{GS}=-4.5V) Typ.	77	mΩ
$R_{DS(ON)}$(at V_{GS}=-2.5V) Typ.	100	mΩ
I_D(T_A=25℃)	-2.5	A

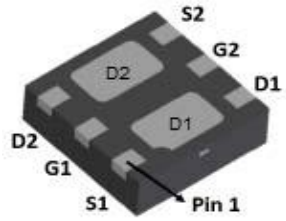
Features

- Advanced Trench Technology
- RoHS and Halogen-Free compliant

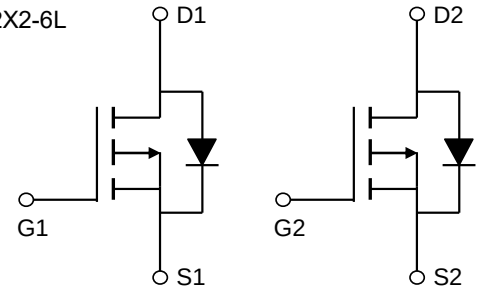
Applications

- Load switch
- PWM Applications
- Power Management

Pin Configuration



DFN2X2-6L



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECAF2301A	DFN2X2-6L	7″	3000pcs

Absolute Maximum Ratings (at T_A=25℃ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		-20	V
V_{GS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	T_A=25℃	-2.5	A
		T_A=70℃	-1.6	A
I_{DM}	Pulse Drain Current Tested [A]		-10	A
P_D	Power Dissipation		1	W
T_J,T_{STG}	Junciton and Storage Temperature Range		-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient [B]	125	℃/W

Electrical Characteristics (at T_J =25℃ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250uA	-20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-20V,V_{GS}=0V	--	--	-1	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±12V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-0.4	-0.7	-1.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [C]	V_{GS}=-4.5V,I_D=-2.5A	--	77	100	mΩ
		V_{GS}=-2.5V,I_D=-1.5A	--	100	145	mΩ
V_{SD}	Forward Voltage	I_S=-1A,V_{GS}=0V	--	--	-1.2	V
I_S	Maximum Body-Diode Continuous Current		--	--	-2.5	A
Dynamic Parameters [D]						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=-10V f=1MHZ	--	281	--	pF
C_{oss}	Output Capacitance		--	42	--	pF
C_{rss}	Reverse Transfer Capacitance		--	31	--	pF
Q_g	Total Gate Charge	V_{DS}=-10V,I_D=-2.5A V_{GS}=-4.5V	--	2.9	--	nC
Q_{gs}	Gate-Source Charge		--	0.45	--	nC
Q_{gd}	Gate-Drain Charge		--	0.75	--	nC
$t_{D(on)}$	Turn-on Delay Time	V_{DD}=-10V R_L=5Ω,R_{GEN}=3Ω, V_{GS}=-4.5V	--	9.8	--	ns
t_r	Turn-on Rise Time		--	4.9	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	20.5	--	ns
t_f	Turn-off Fall Time		--	7	--	ns

A. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

B. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 2OZ copper.

C. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

D. Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure1: Output Characteristics

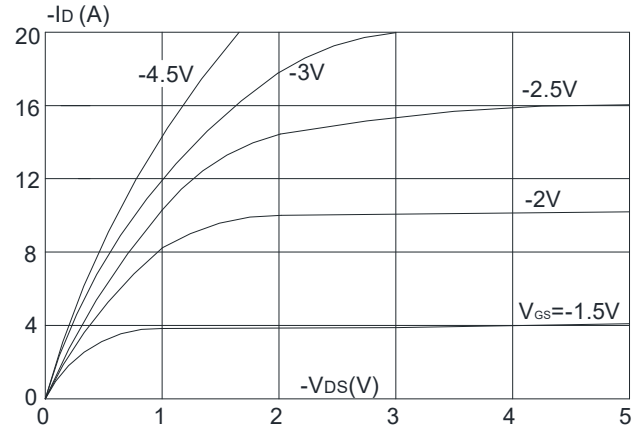


Figure 2: Typical Transfer Characteristics

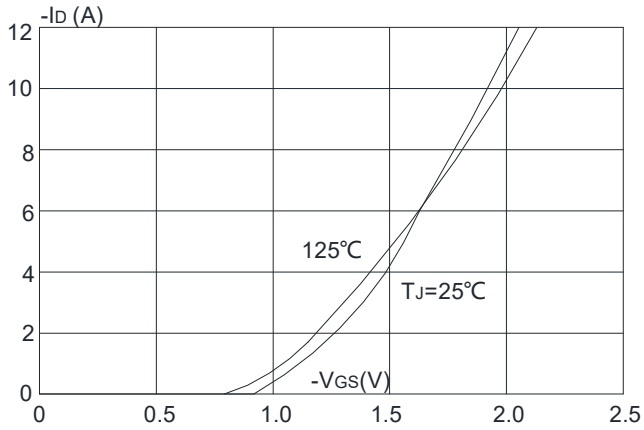


Figure 3: On-resistance vs. Drain Current

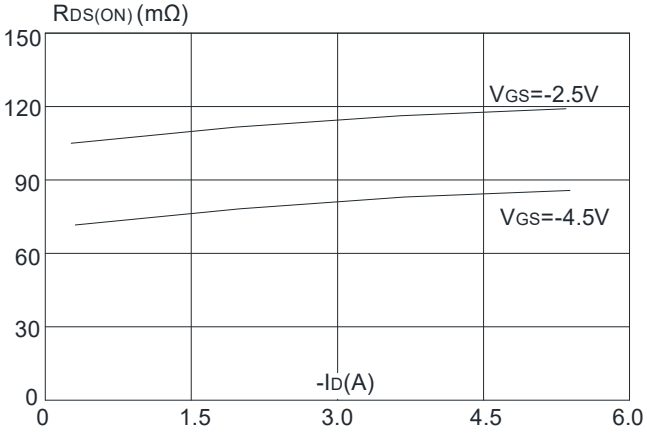


Figure 4: Body Diode Characteristics

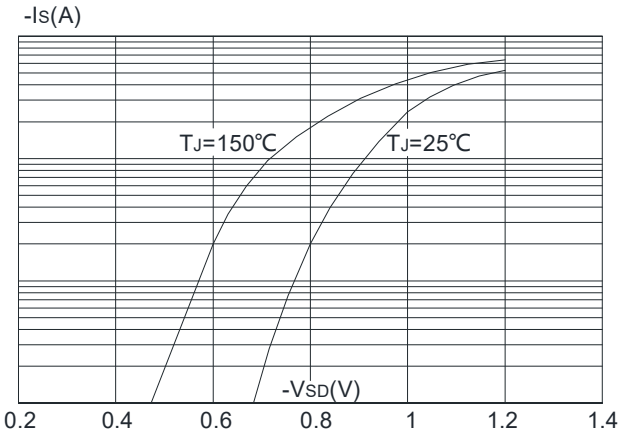


Figure 5: Gate Charge Characteristics

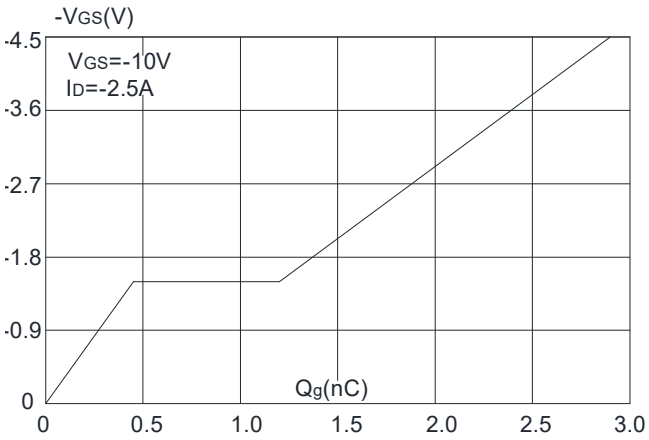
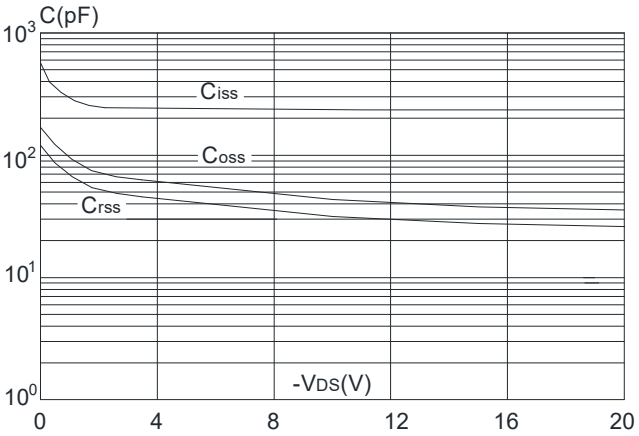


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

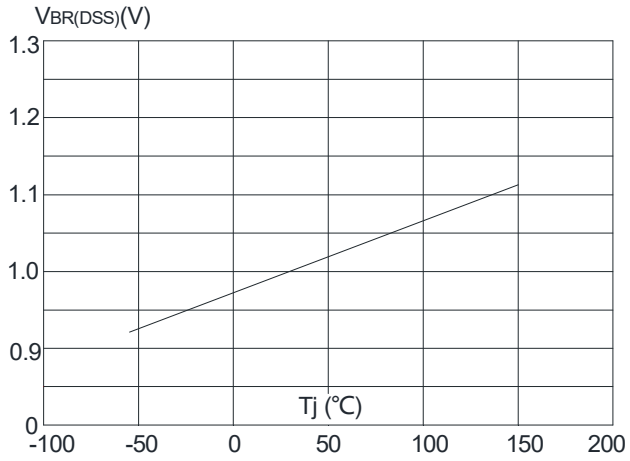


Figure 8: Normalized on Resistance vs. Junction Temperature

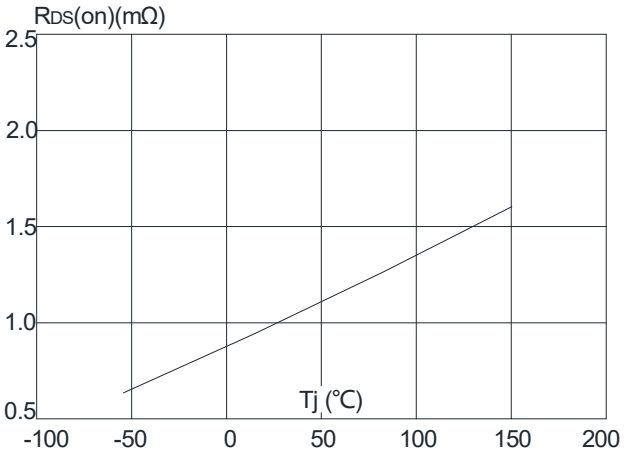


Figure 9: Maximum Safe Operating Area

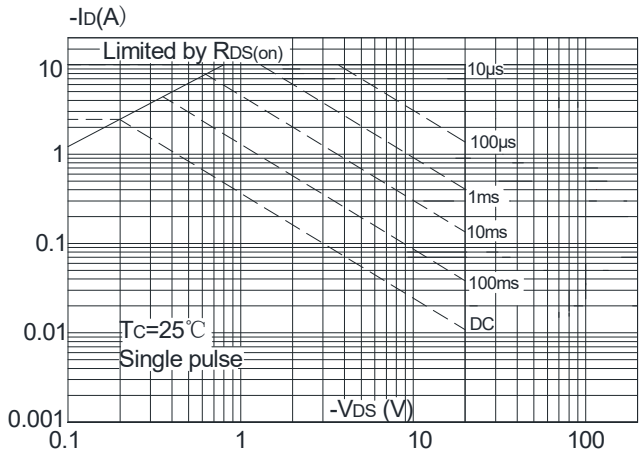


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

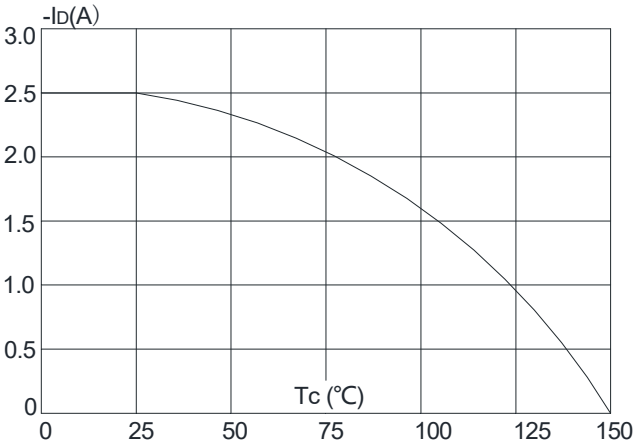
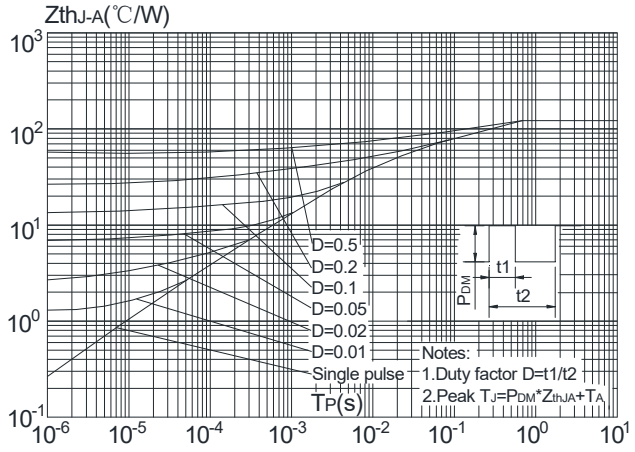
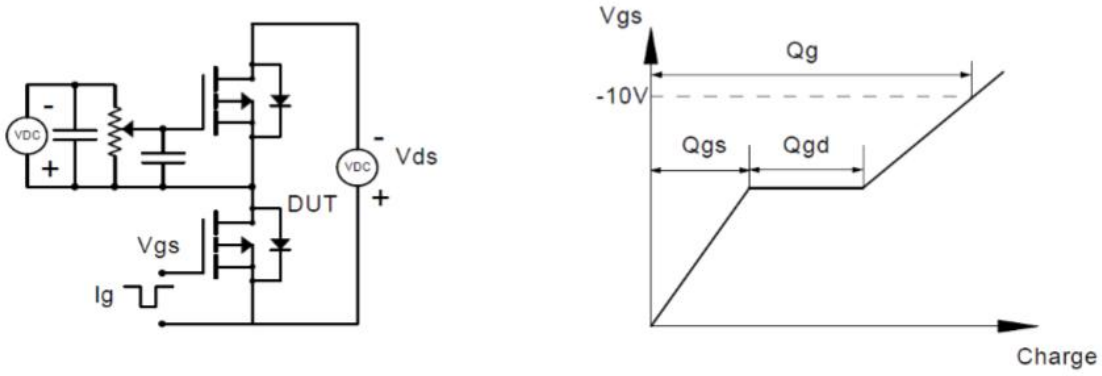


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

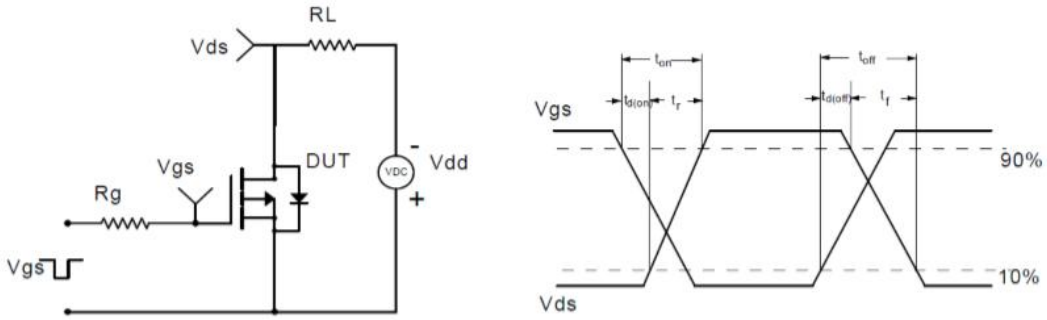


Test Circuit

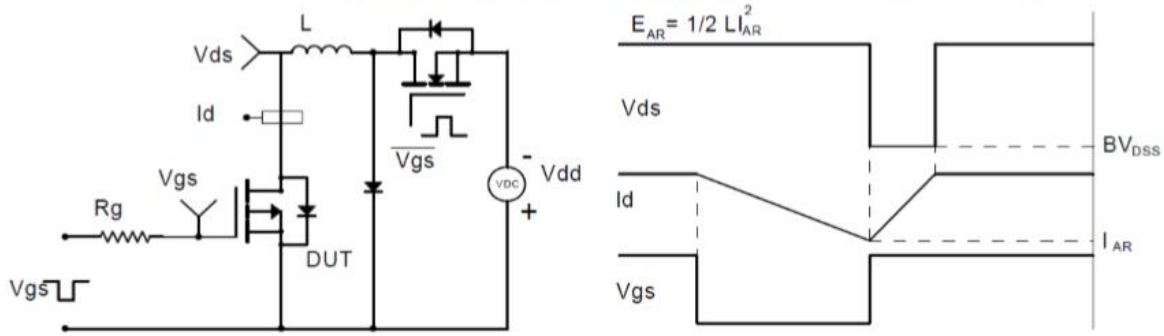
Gate Charge Test Circuit & Waveform



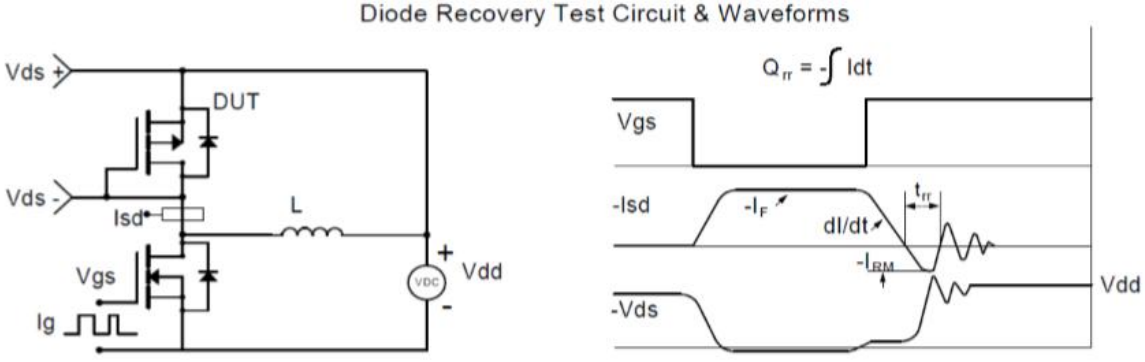
Resistive Switching Test Circuit & Waveforms



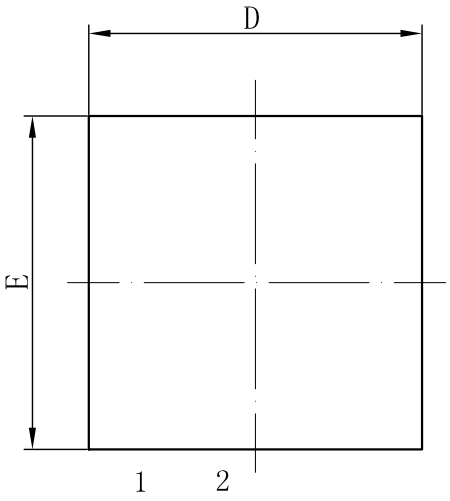
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



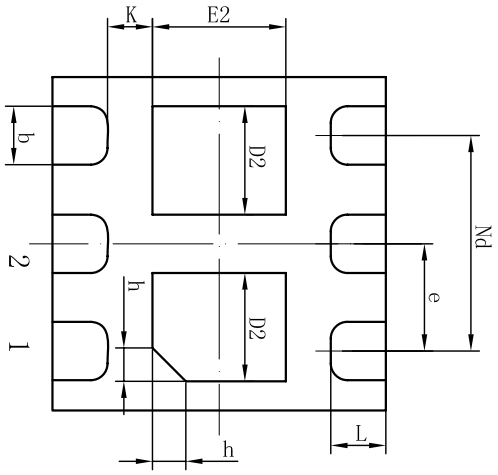
Diode Recovery Test Circuit & Waveforms



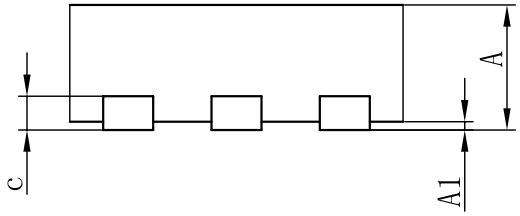
DFN2X2-6L Package Information



Top View



Bottom View



Side View

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0. 70	0.75	0. 80
A1	0	0. 02	0. 05
b	0. 30	0.35	0. 40
c	0.18	0.20	0.25
D	1. 95	2. 00	2. 05
D2	0. 60	0. 65	0. 70
e	0. 65BSC		
Nd	1. 30BSC		
E	1. 95	2. 00	2. 05
E2	0. 75	0. 80	0. 85
K	0. 20	–	–
L	0. 28	0.33	0. 38
h	0. 15	0. 20	0. 25