

Description

The UT6JA2 is the new generation trench P-channel MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high efficiency power management applications

Features

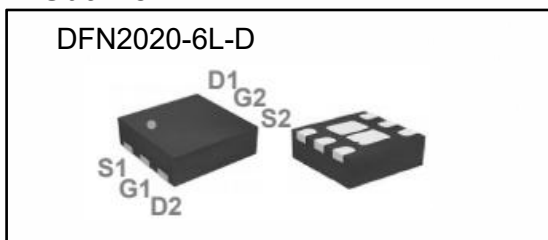
- Low On-Resistance
- Low Input Capacitance
- Fast switching
- Green Device Available

Applications

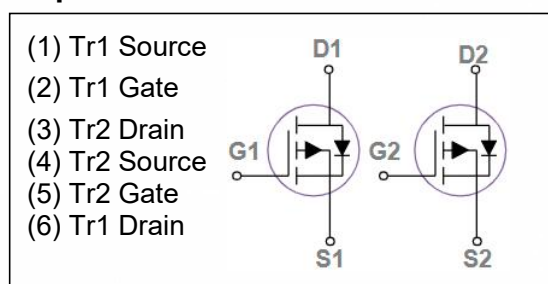
- Battery Charging
- Load Switch
- Power Management Functions
- DC-DC Converters

V_{DSS}	-30V
I_D	-3.8A
$R_{DS(ON)}$	65mΩ @ $V_{GS} = -4.5V$
$R_{DS(ON)}$	98mΩ @ $V_{GS} = -2.5V$

Outline



Equivalent



Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
UT6JA2	DFN2020-6L-D		3000

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current-Continuous(Note2)	$T_A = 25^\circ C$	I_D	-3.8	A
	$T_A = 70^\circ C$		-3.04	A
-Pulsed(Note 1· Note 2)		I_{DM}	-15	A
Maximum Power Dissipation	$T_A = 25^\circ C$	P_D	1.4	W
	$T_A = 70^\circ C$		0.88	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	82	°C /W
Thermal Resistance Junction-Case		$R_{\theta JC}$	13	°C /W

Electrical Characteristics (T_C=25 °C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =-250uA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V , V _{GS} =0V			-1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±12V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250uA	-0.6	-0.9	-1.3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V , I _D =-3A		65	80	mΩ
		V _{GS} =-2.5V , I _D =-2A		98	125	mΩ
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C _{ISS}	V _{DS} =-10V , V _{GS} =0 V , f =1.0MHz		380		pF
Output Capacitance	C _{OSS}			40		pF
Reverse Transfer Capacitance	C _{RSS}			30		pF
Total Gate Charge	Qg	V _{DS} =-15V , I _D =-3A , V _{GS} =-4.5V		5.3		nC
Gate-Source Charge	Qgs	V _{DS} =-15V , I _D =-3A , V _{GS} =-4.5V		1.4		nC
Gate-Drain Charge	Qgd			1.6		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =-15V , I _D =-1A , V _{GS} =-4.5V , R _G =6Ω		4.6		ns
Rise Time	tr			10.8		ns
Turn-Off Delay Time	t _{D(OFF)}			25		ns
Fall Time	tf			6.6		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =-3A			-1.2	V

Notes:

- 1、Pulse Test Width < 300us,Duty Cycle< 2%
- 2、Drain current limited by maximum junction temperature.
- 3、Guaranteed by design,not subject to production testing.

Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. TC

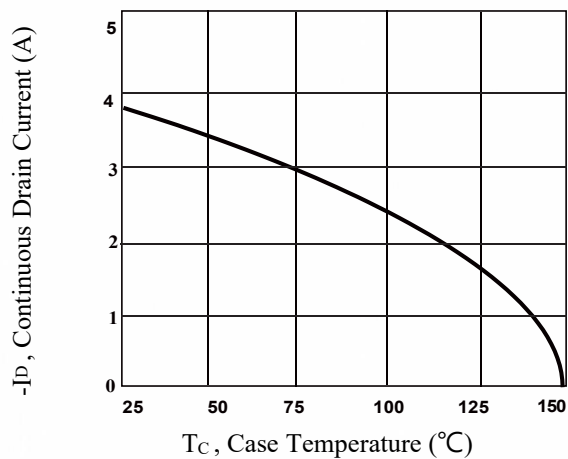


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

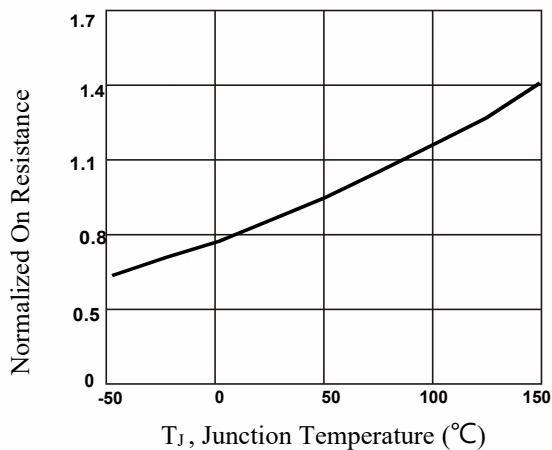


Fig.3 Normalized V_{th} vs. T_J

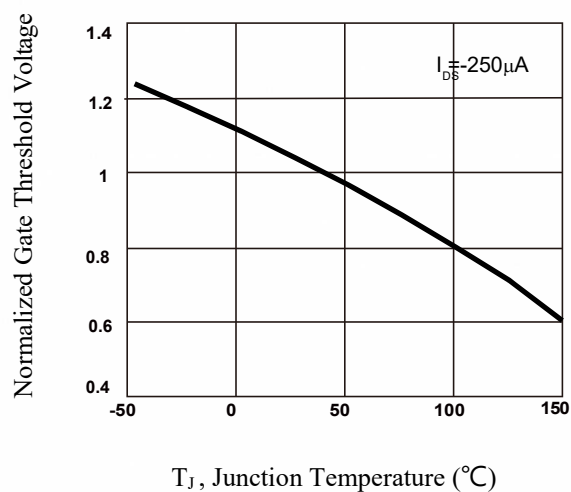


Fig.4 Gate Charge Waveform

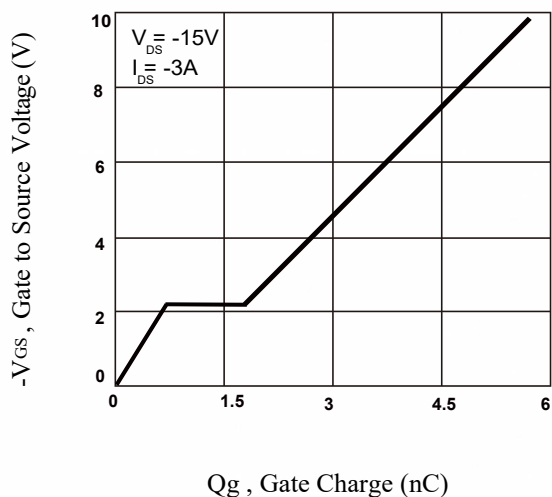


Fig.5 Typical Output Characteristics

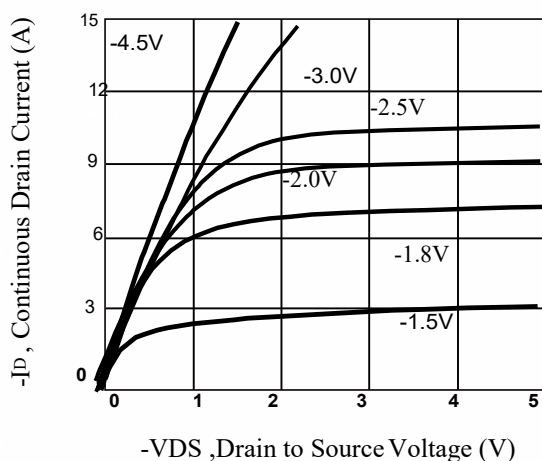


Fig.6 Capacitance

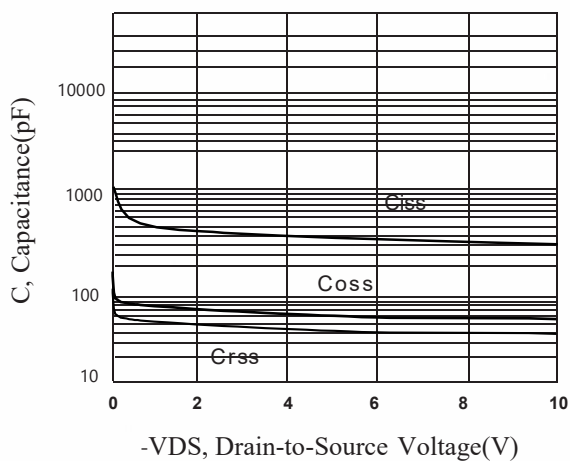


Fig.7 Turn-On Resistance vs. ID

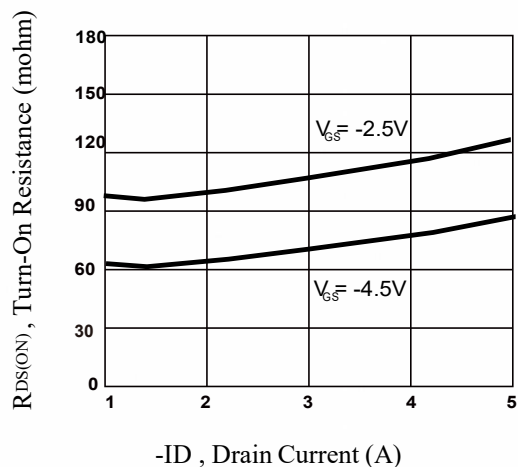


Fig.8 Typical Source-Drain Diode Forward Voltage

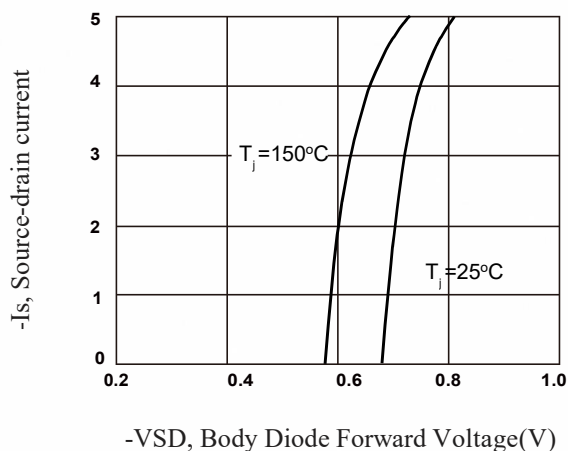


Fig.9 Normalized Transient Impedance

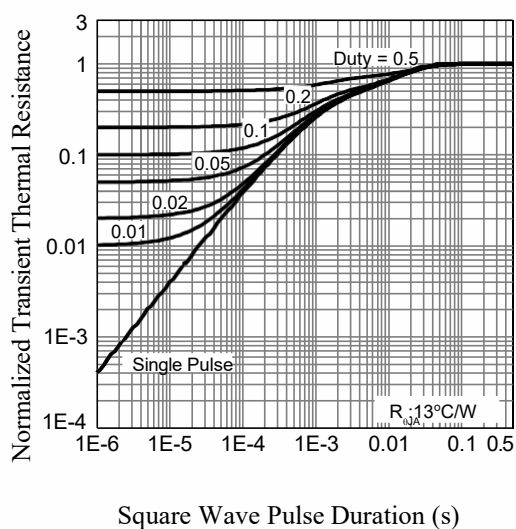


Fig.10 Maximum Safe Operation Area

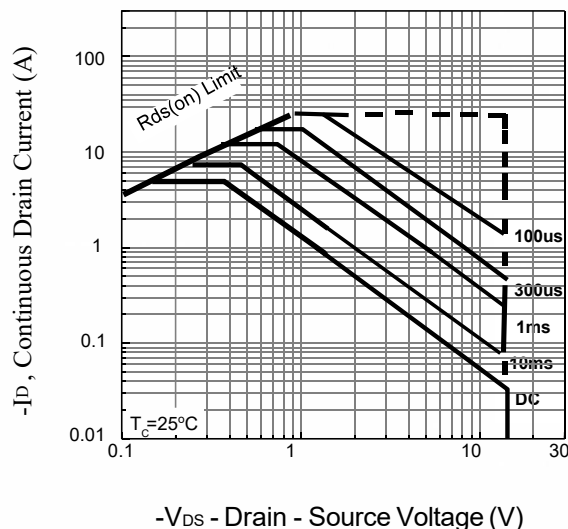


Figure11a. Switching Test Circuit

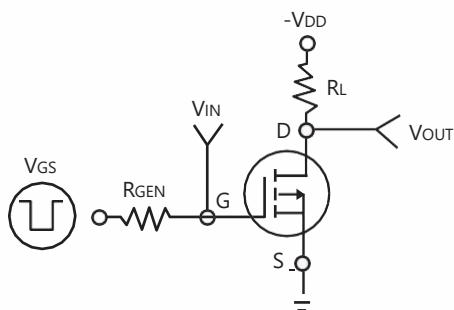
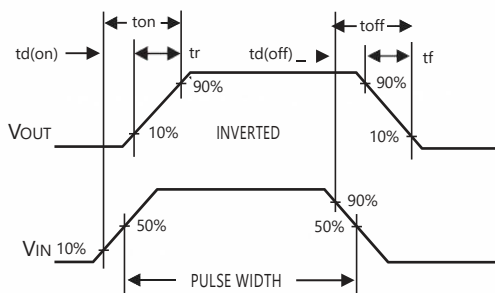
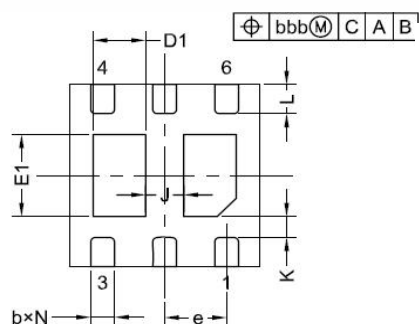


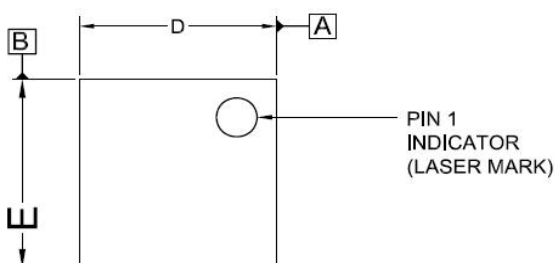
Figure11b. Switching Waveforms



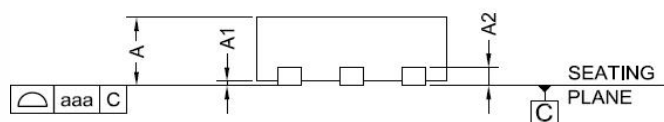
DFN2020-6L-D Package Information



BOTTOM VIEW



TOP VIEW



SIDE VIEW

COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.203		
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	0.50	0.55	0.60
E	1.95	2.00	2.05
E1	0.85	0.90	0.95
e	0.65BSC		
L	0.27	0.32	0.37
J	0.40BSC		
K	0.20MIN		
N	6		
aaa	0.08		
bbb	0.10		

NOTICE

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