

Dual N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D Max
20V	0.014 Ω @ 4.5V	6.0A
	0.018 Ω @ 2.5V	

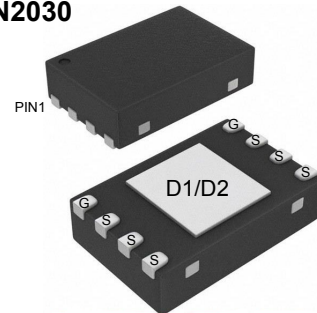
FEATURE

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$
- Low Gate Charge
- High Power and Current Handling Capability
- Surface Mount Package

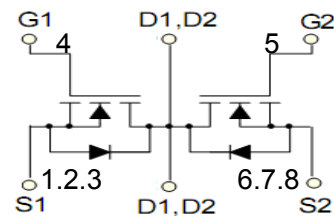
APPLICATION

- Battery Protection
- Load Switch
- Power Management

TDFN2030



Equivalent Circuit



MARKING



Y :year code W :week code

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	6	A
Pulsed Drain Current (note 1)	I_{DM}	20	A
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^\circ\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T_L	260	$^\circ\text{C}$

T_a =25 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERICTISCS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =18V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±12V, V _{DS} = 0V			±100	nA
Gate threshold voltage (note 3)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5		1.0	V
Drain-source on-resistance (note 3)	R _{DS(on)}	V _{GS} =4.5V, I _D =6A		14	20	mΩ
		V _{GS} =2.5V, I _D =5A		18	30	mΩ
Forward tranconductance (note 3)	g _{FS}	V _{DS} =5V, I _D =5A		10		S
Diode forward voltage (note 3)	V _{SD}	I _S =3.50A, V _{GS} = 0V			1.2	V
DYNAMIC CHARACTERICTISCS (note4)						
Input Capacitance	C _{iss}	V _{DS} =8V, V _{GS} =0V, f =1MHz		800		pF
Output Capacitance	C _{oss}			155		pF
Reverse Transfer Capacitance	C _{rss}			125		pF
SWITCHING CHARACTERICTISCS (note 4)						
Turn-on delay time	t _{d(on)}	V _{DD} =10V, V _{GS} =4V, I _D =1A, R _{GEN} =10Ω		18		ns
Turn-on rise time	t _r			4.8		ns
Turn-off delay time	t _{d(off)}			43.5		ns
Turn-off fall time	t _f			20		ns
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =4A		11		nC
Gate-Source Charge	Q _{gs}			2.2		nC
Gate-Drain Charge	Q _{gd}			2.5		nC

Notes :

- 1.Repetitive rating: Pulse width limited by maximum junction temperature
- 2.Surface Mounted on FR4 board, t ≤10 sec.
3. Pulse test : Pulse width ≤300μs, duty cycle ≤2%.
4. Guaranteed by design, not subject to production.

Typical Electrical and Thermal Characteristics

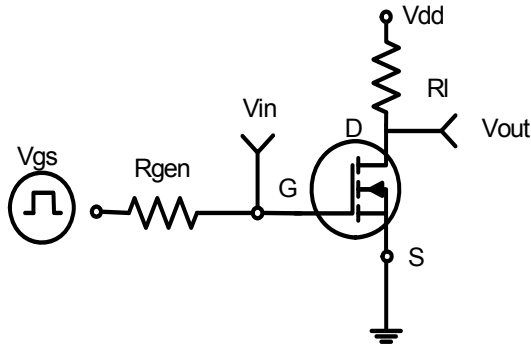


Figure 1: Switching Test Circuit

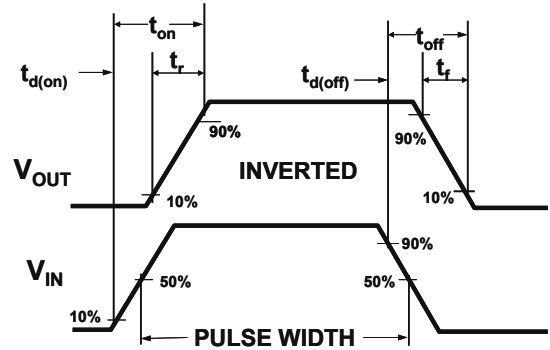


Figure 2: Switching Waveforms

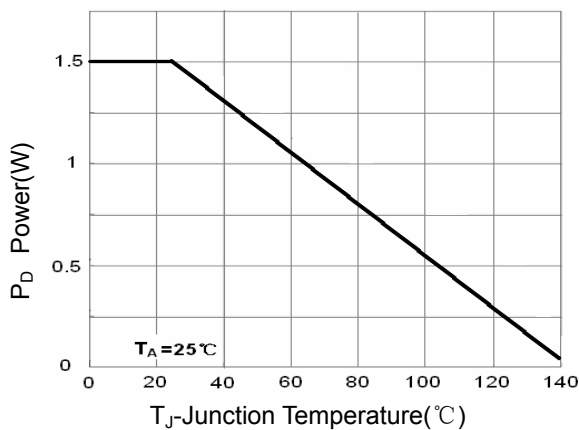


Figure 3 Power Dissipation

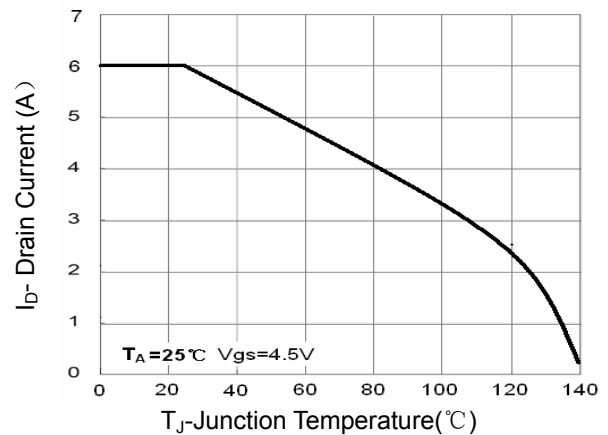


Figure 4 Drain Current

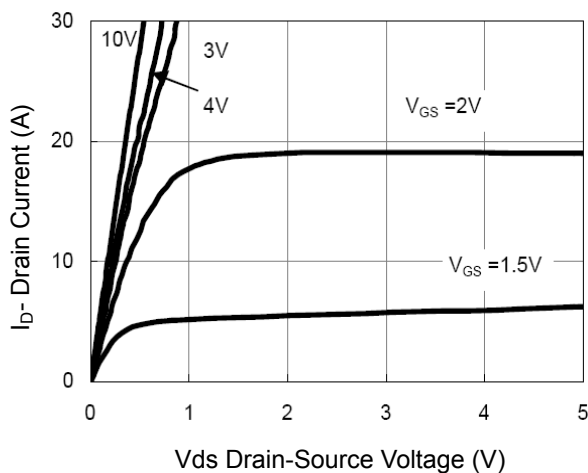


Figure 5 Output Characteristics

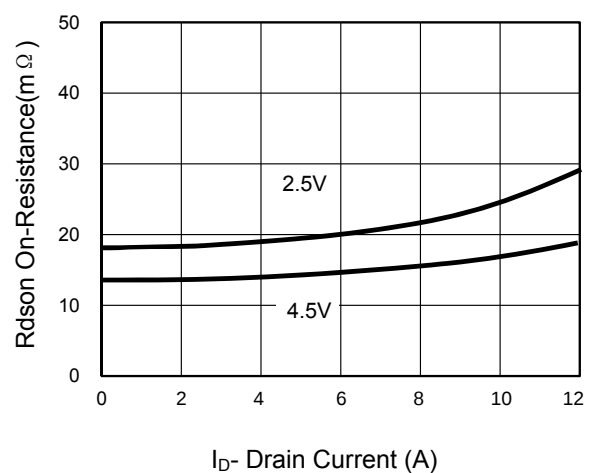


Figure 6 Drain-Source On-Resistance

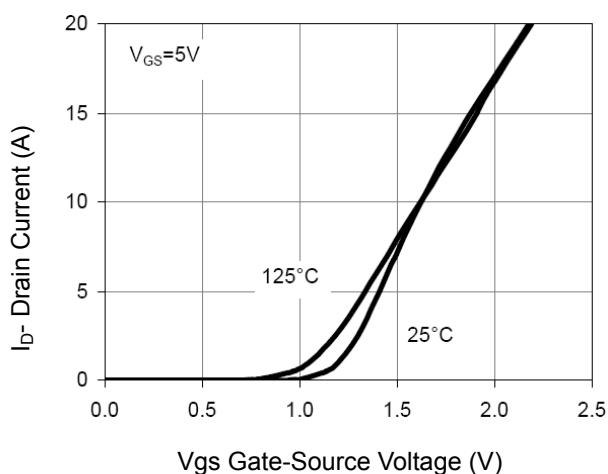


Figure 7 Transfer Characteristics

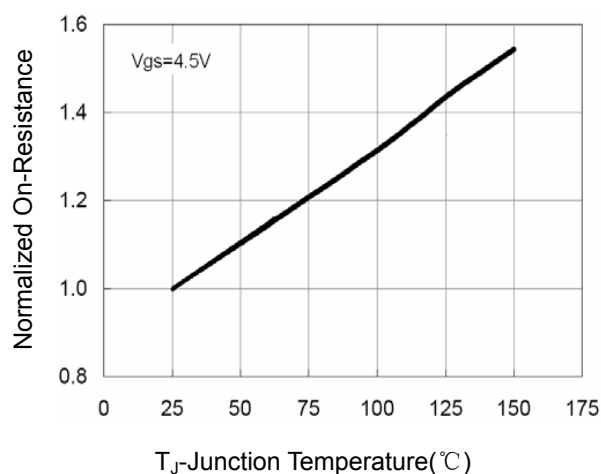


Figure 8 Drain-Source On-Resistance

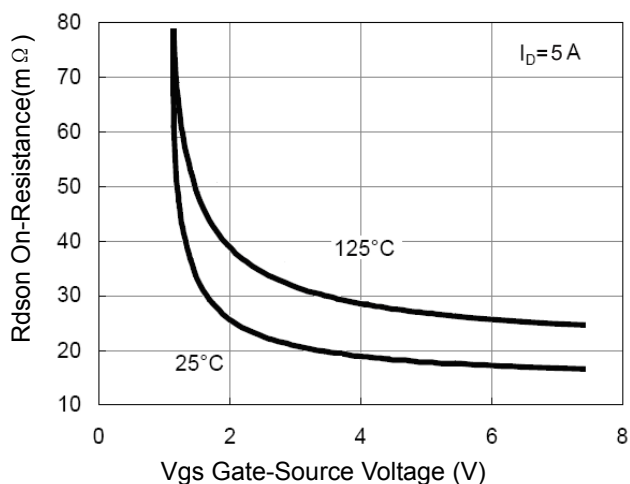


Figure 9 Rdson vs Vgs

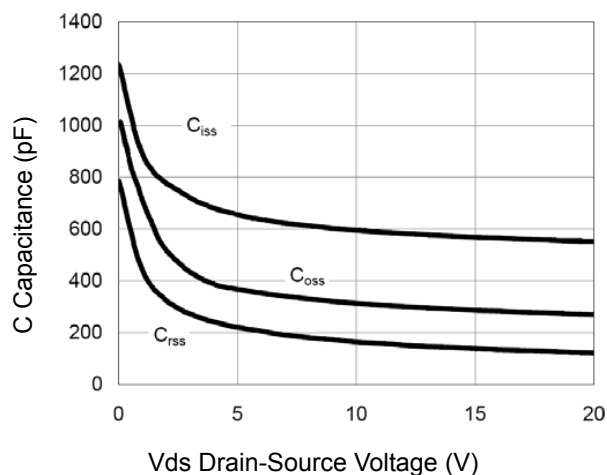


Figure 10 Capacitance vs Vds

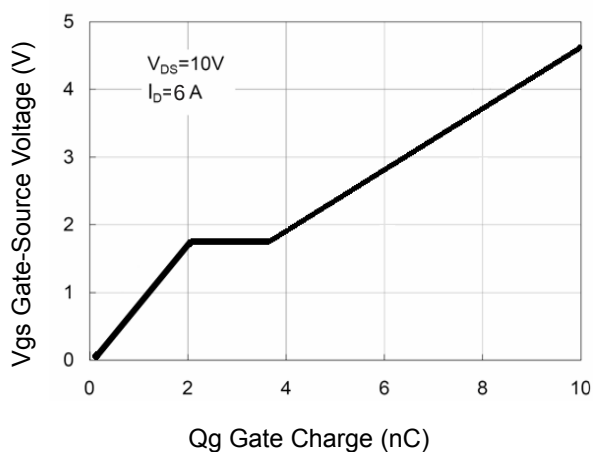


Figure 11 Gate Charge

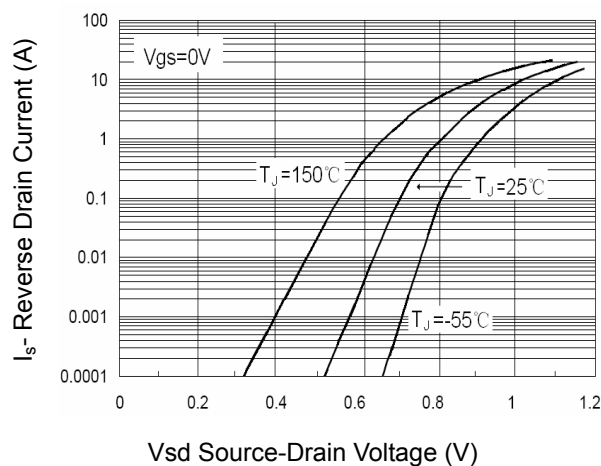


Figure 12 Source- Drain Diode Forward

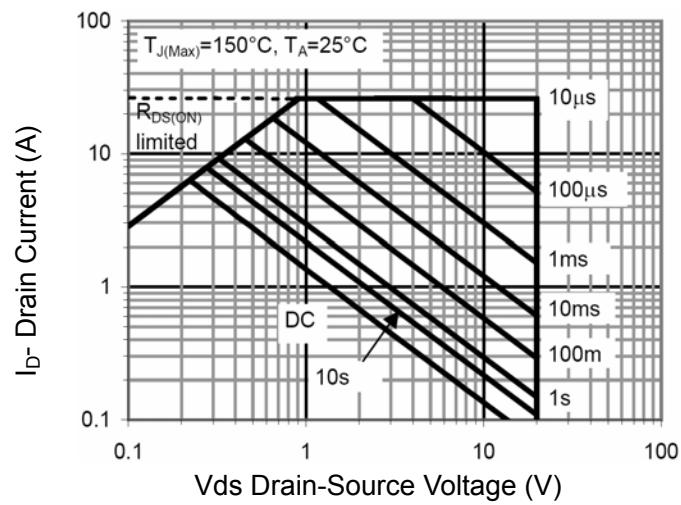


Figure 13 Safe Operation Area

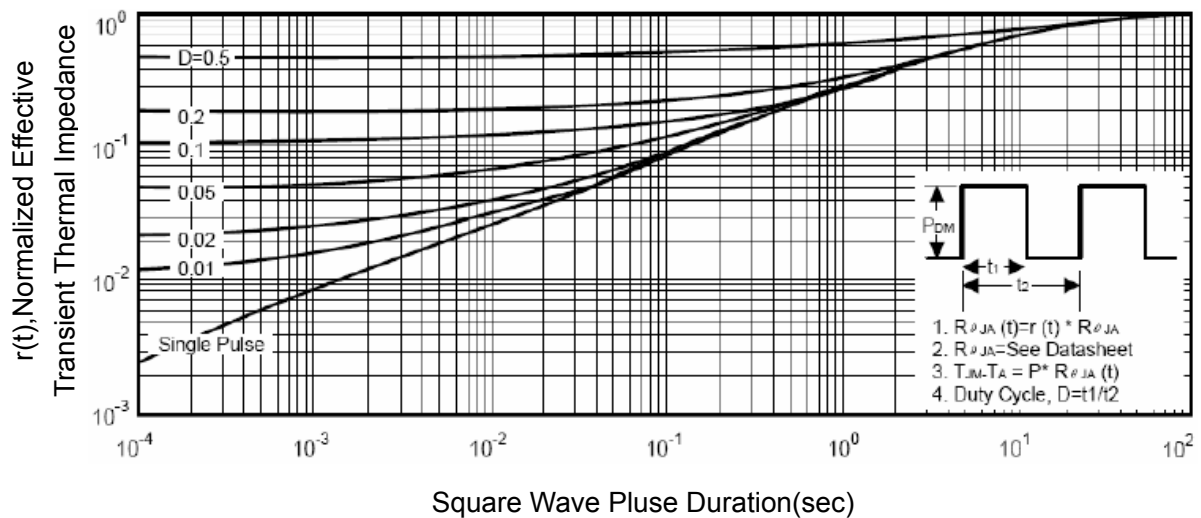
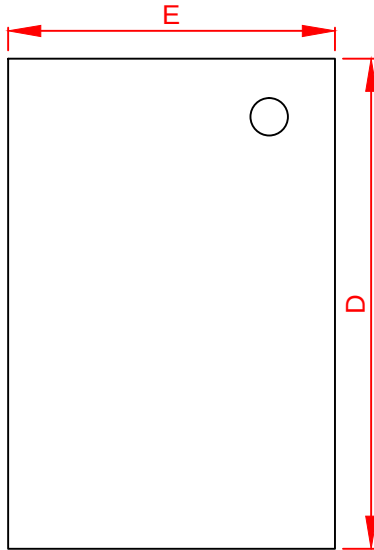
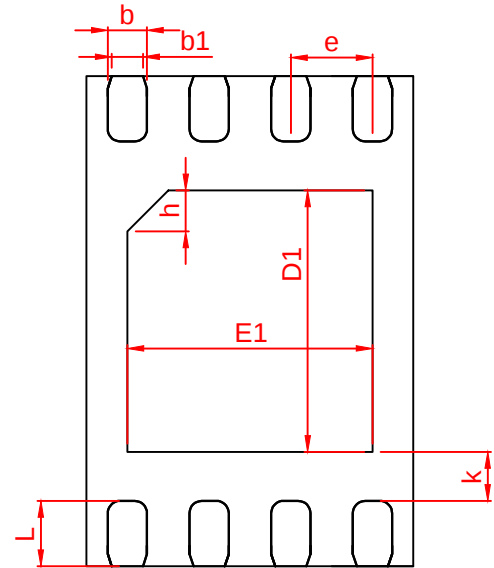


Figure 14 Normalized Maximum Transient Thermal Impedance

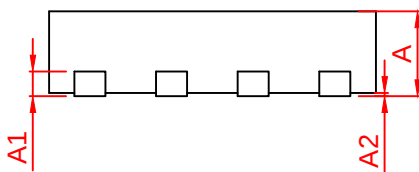
TDFN2030-8 Package Information



TOPVIEW



BOTTOMVIEW



SIDEVIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
* D	2.90	3.00	3.10
* E	1.90	2.00	2.10
* D1	1.55	1.60	1.65
* E1	1.45	1.50	1.55
* b	0.19	0.24	0.29
* b1	0.18REF		
* e	0.50BSC		
* L	0.35	0.40	0.45
* A	0.50	0.55	0.60
A1	0.15REF		
* A2	0.00	0.02	0.05
* K	0.25	0.30	0.30