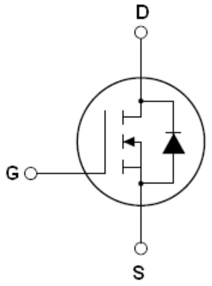
Feathers:

- Advanced trench process technology
- avalanche energy, 100% test
- Fully characterized avalanche voltage and current

ID =60A
BV=60V
Rdson=14mΩ**（max.）**



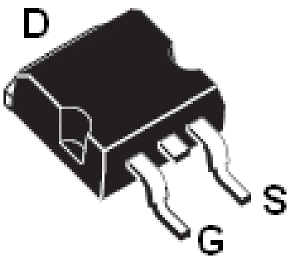
Description:

The FTK6014A is a new generation of middle voltage and high current N–Channel enhancement mode trench power MOSFET. This new technology increases the device reliability and electrical parameter repeatability. FTK6014A is assembled in high reliability and qualified assembly house.

Application:

- Power switching application

FTK6014A TOP View (D2PAK)



Absolute Maximum Ratings

	Parameter	Max.	Units
I_D@T_c=25 ℃	Continuous drain current,VGS@10V	60	A
I_D@T_c=100℃	Continuous drain current,VGS@10V	42	
I_{DM}	Pulsed drain current ①	240	
P_D@T_C=25℃	Power dissipation	100	W
	Linear derating factor	0.74	W/ ℃
V_{GS}	Gate-to-Source voltage	±20	V
E_{AS}	Single pulse avalanche energy ②	235	mJ
E_{AR}	Repetitive avalanche energy	TBD	
T_J T_{STG}	Operating Junction and Storage Temperature Range	–55 to +150	℃

Thermal Resistance

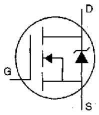
	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case	—	1.25	—	℃/W
$R_{\theta JA}$	Junction-to-ambient	—	—	62	

Electrical Characteristics @TJ=25 ℃(unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source breakdown voltage	60	—	—	V	V_{GS}=0V,I_D=250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	12	14	mΩ	V_{GS}=10V,I_D=30A
$V_{GS(th)}$	Gate threshold voltage	2.0		4.0	V	V_{DS}=V_{GS},I_D=250μA
g_{fs}	Forward transconductance	-	60	—	S	V_{DS}=5V,I_D=30A
I_{DSS}	Drain-to-Source leakage current	—	—	2	μA	V_{DS}=60V,V_{GS}=0V
		—	—	10		V_{DS}=60V, V_{GS}=0V,T_J=150℃
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS}=20V
	Gate-to-Source reverse leakage	—	—	-100		V_{GS}=-20V

Q_g	Total gate charge	—	45	—	nC	I_D=30A V_{DD}=30V V_{GS}=10V
Q_{gs}	Gate-to-Source charge	—	4	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	15	—		
$t_{d(on)}$	Turn-on delay time	—	14.6	—	nS	V_{DD}=30V I_D=2A ,R_L=15Ω R_G=2.5Ω V_{GS}=10V
t_r	Rise time	—	14.2	—		
$t_{d(off)}$	Turn-Off delay time	—	40	—		
t_f	Fall time	—	7.3	—		
C_{iss}	Input capacitance	—	1480	—	pF	V_{GS}=0V V_{DS}=25V f=1.0MHZ
C_{oss}	Output capacitance	—	190	—		
C_{rss}	Reverse transfer capacitance	—	135	—		

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current . (Body Diode)	—	—	60	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current . (Body Diode) ①	—	—	240		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	T_J=25℃,I_S=40A,V_{GS}=0V ③
t_{rr}	Reverse Recovery Time	—	33	—	nS	T_J=25℃,I_F=60A di/dt=100A/μs ③
Q_{rr}	Reverse Recovery Charge	—	61	—	nC	
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by Ls + LD)				

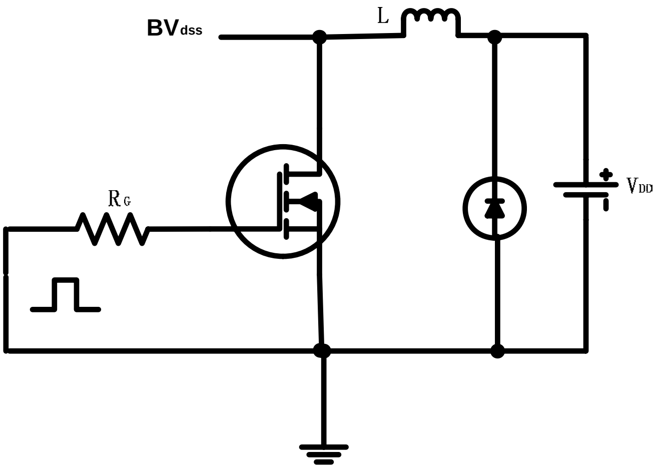
Notes:

① Repetitive rating; pulse width limited by max junction temperature.

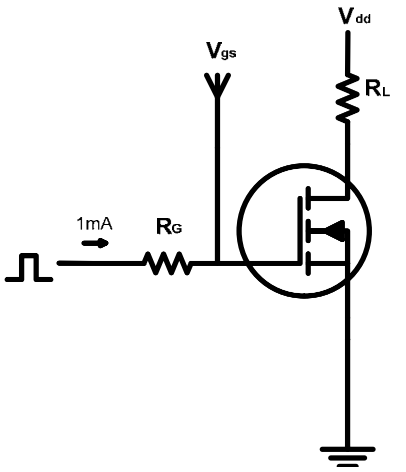
② Test condition: L =0.3mH, VDD = 30V,Id=37A

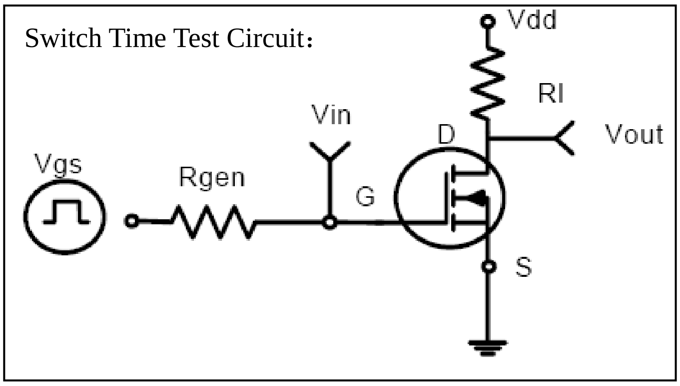
③ Pulse width≤300μS, duty cycle≤1.5% ; RG = 25Ω Starting TJ = 25°C

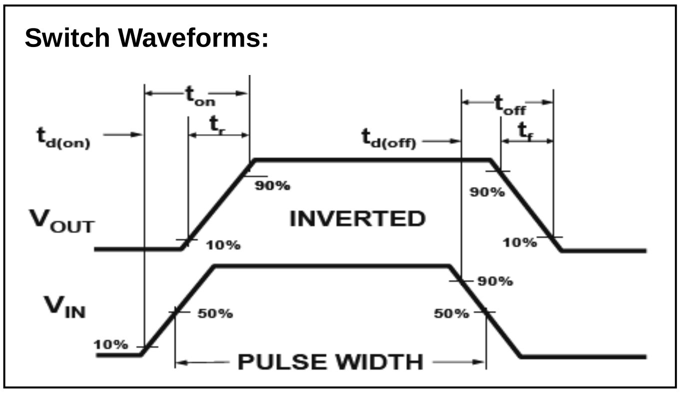
EAS test circuit:

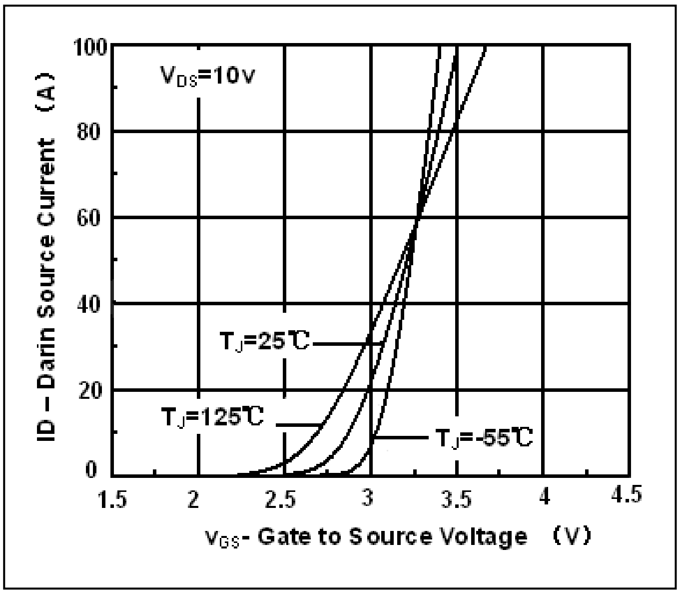


Gate charge test circuit:

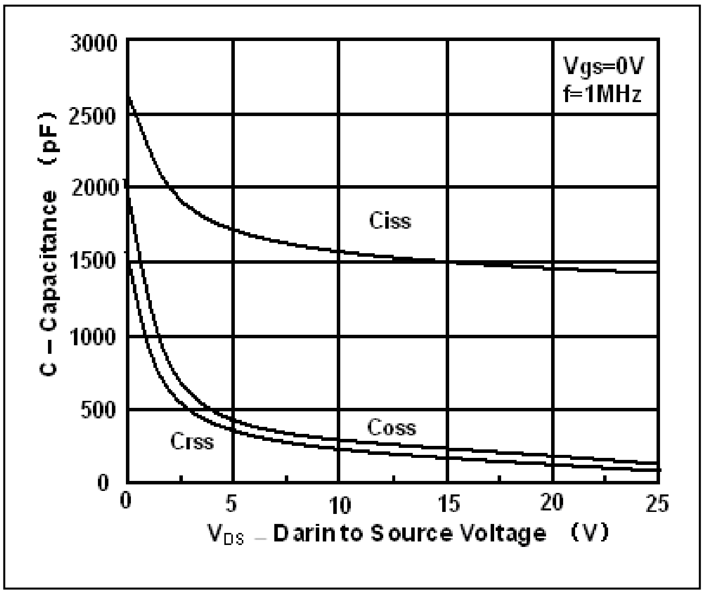




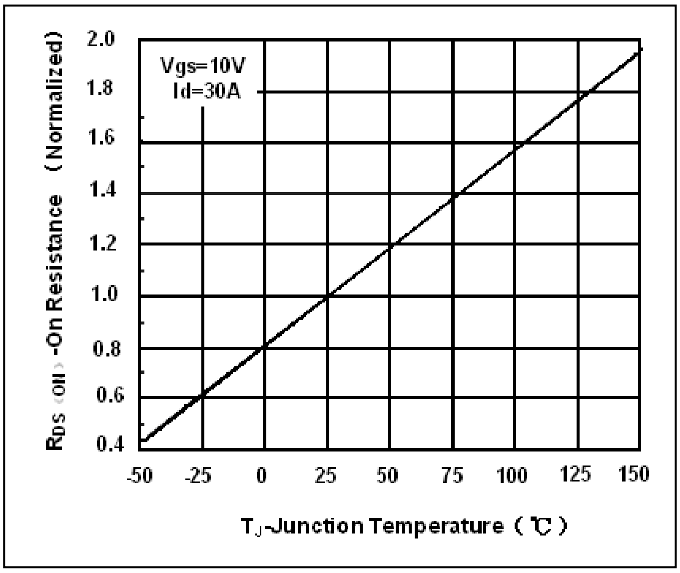


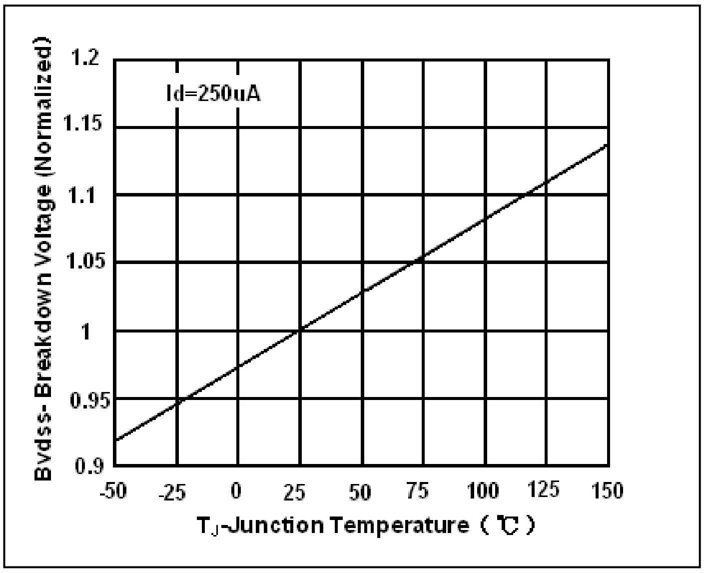


Transfer Characteristic



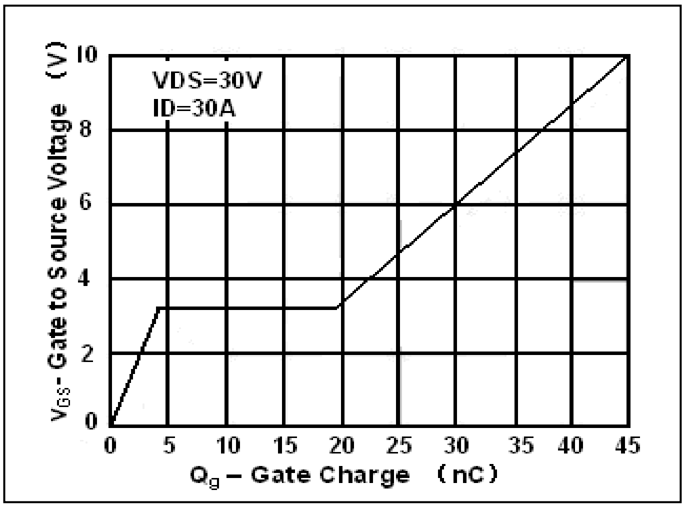
Capacitance



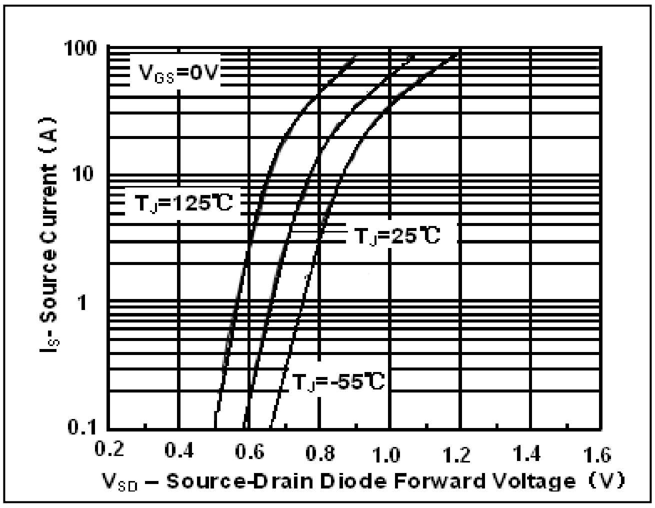


On Resistance vs Junction Temperature

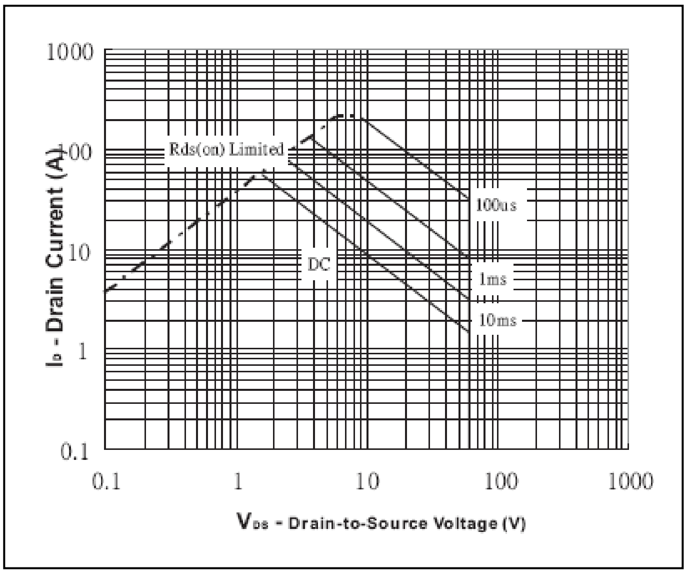
Breakdown Voltage vs Junction Temperature



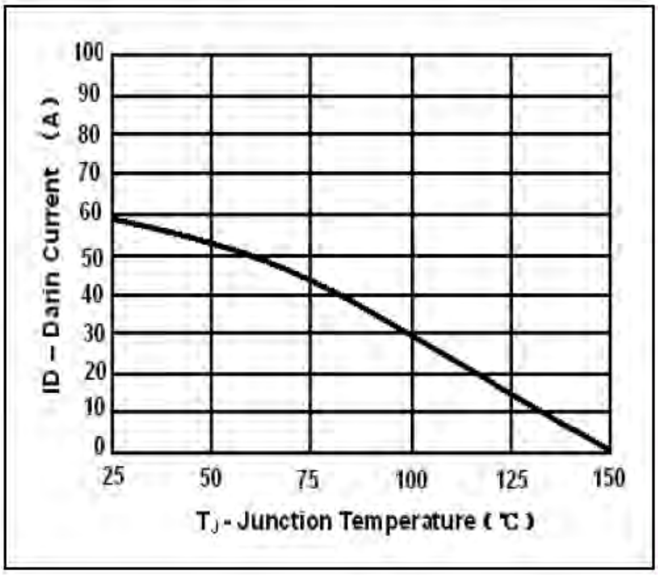
Gate Charge



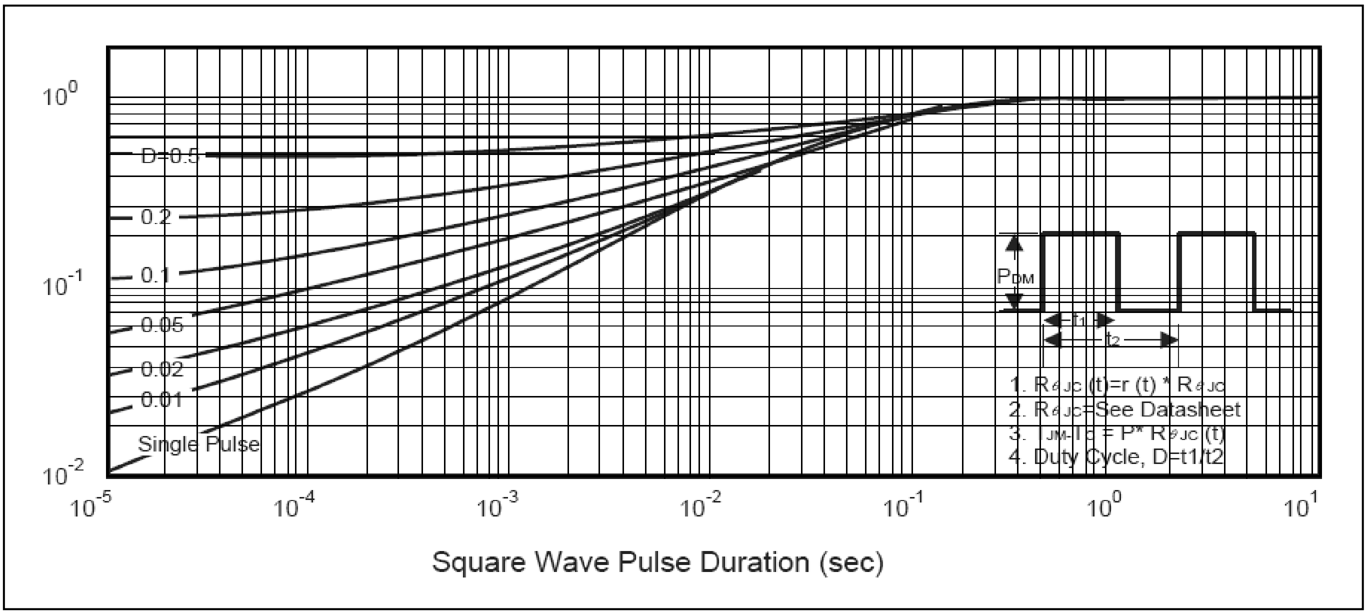
Source-Drain Diode Forward Voltage



Safe Operation Area



Max Drain Current vs Junction Temperature



Transient Thermal Impedance Curve

D2PAK MECHANICAL DATA:

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.7		0.93	0.027		0.036
B2	1.14		1.7	0.044		0.067
C	0.45		0.6	0.017		0.023
C2	1.23		1.36	0.048		0.053
D	8.95		9.35	0.352		0.368
D1		8			0.315	
E	10		10.4	0.393		
E1		8.5			0.334	
G	4.88		5.28	0.192		0.208
L	15		15.85	0.590		0.625
L2	1.27		1.4	0.050		0.055
L3	1.4		1.75	0.055		0.068
M	2.4		3.2	0.094		0.126
R		0.4			0.015	
V2	0º		4º