FTK10N10 N-Channel Power MOSFET

GENERAL DESCRIPTION

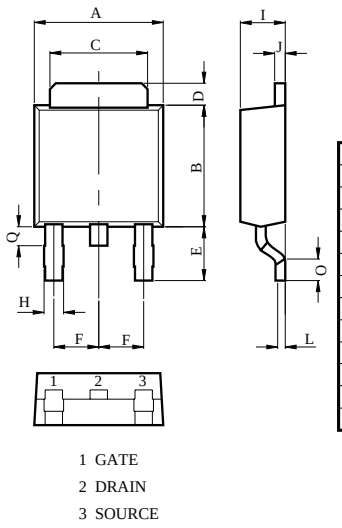
The FTK10N10 provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURE

- Excellent package for good heat dissipation
- Ultra low gate charge
- Low reverse transfer capacitance
- Fast switching capability
- Avalanche energy specified

APPLICATION

- Power switching application



DIM	MILLIMETERS
A	6 50 ± 0 2
B	5 60 ± 0 2
C	5 20 ± 0 2
D	1 50 ± 0 2
E	2 70 ± 0 2
F	2 30 ± 0 1
H	1 00 MAX
I	2 30 ± 0 2
J	0 5 ± 0 1
L	0 50 ± 0 10
O	1 6 ± 0 2
Q	0 95 MAX

1 GATE
2 DRAIN
3 SOURCE

D-PAK (TO-252)

Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	9.6	A
Pulsed Drain Current	I_{DM}	38.4	
Single Pulsed Avalanche Energy (note1)	E_{AS}	150	mJ
Thermal Resistance from Junction to Ambient	$R_{\Theta JA}$	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	- 55 ~ +150	
Maximum lead temperature for soldering purposes , 1/8" from case for 5 seconds	T_L	260	

Electrical characteristics (T_a=25℃ unless otherwise noted)

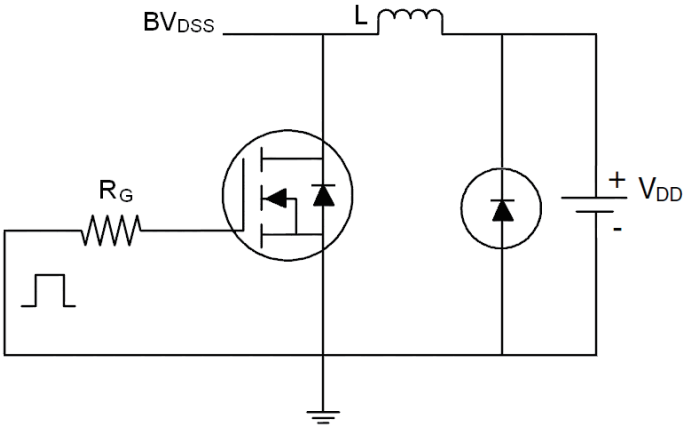
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D=250μA	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
On characteristics (note2)						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2		2.5	V
Static drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D=5A			0.14	Ω
Forward transconductance	g_{fs}	V_{DS} =25V, I_D =6A	3.5	.		S
Dynamic characteristics (note 3)						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		690		pF
Output capacitance	C_{oss}			120		
Reverse transfer capacitance	C_{rss}			90		
Switching characteristics (note 3)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, R_G=2.5Ω, I_D =2A, V_{GS} =10V		11		ns
Turn-on rise time	t_r			7.4		
Turn-off delay time	$t_{d(off)}$			35		
Turn-off fall time	t_f			9.1		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =10V,I_D =3A		15.5		nC
Gate-Source Charge	Q_{gs}			3.2		nC
Gate-Drain Charge	Q_{gd}			4.7		nC
Drain-Source Diode Characteristics						
Drain-source diode forward voltage (note2)	V_{SD}	V_{GS} = 0V, I_S =9A			1.2	V
Continuous drain-source diode forward current	I_S				9.6	A
Pulsed drain-source diode forward current	I_{SM}				38.4	A

Notes :

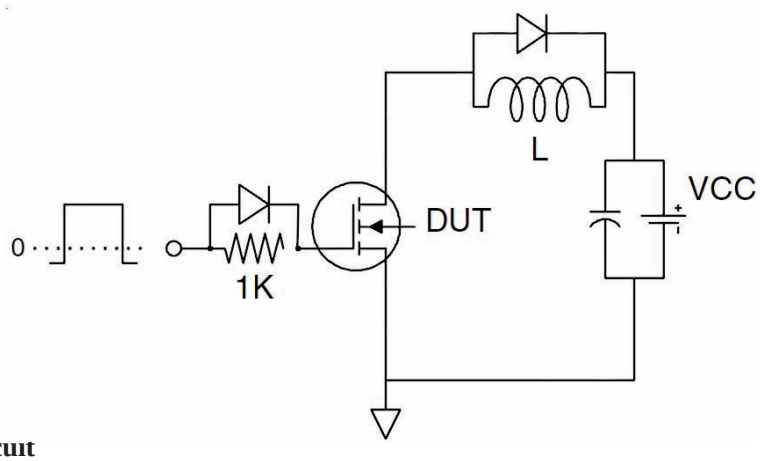
1. I_L=10A, V_{DD}=50V, R_G=25Ω,Starting T_J=25℃.
2. Pulse Test : Pulse width≤300μs, duty cycle≤2%.
3. Guaranteed by design,not subject to production

Test Circuit

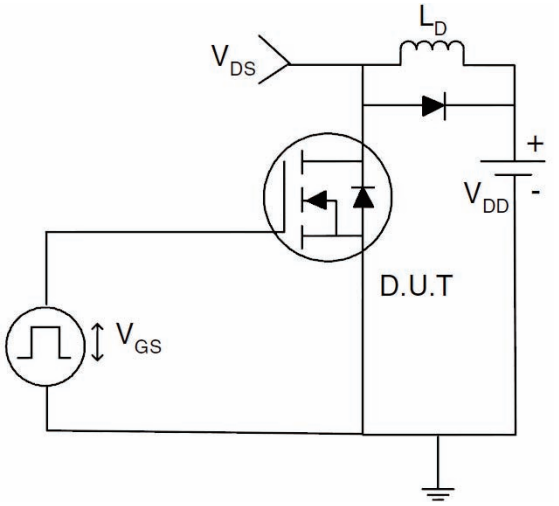
1）E_{AS} test circuit



2）Gate charge test circuit



3）Switch Time Test Circuit



Typical Electrical and Thermal Characteristics (curves)

Figure1. Source-Drain Diode Forward Voltage

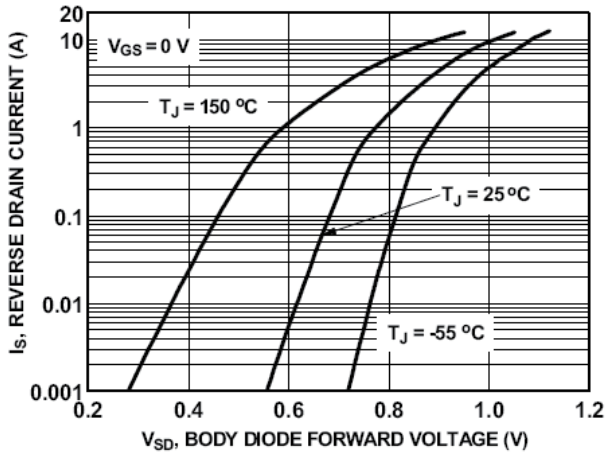


Figure2. Safe operating area

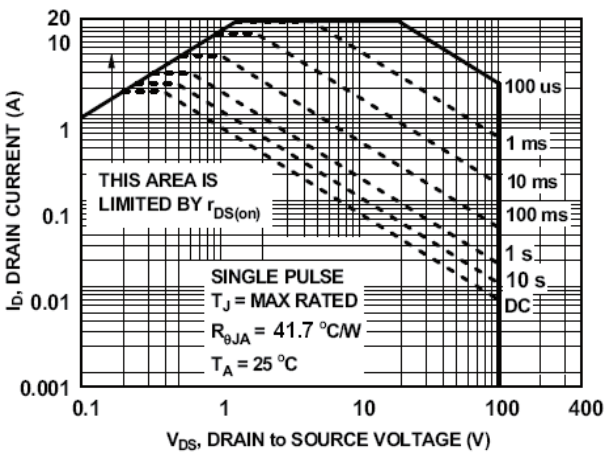


Figure3. Output characteristics

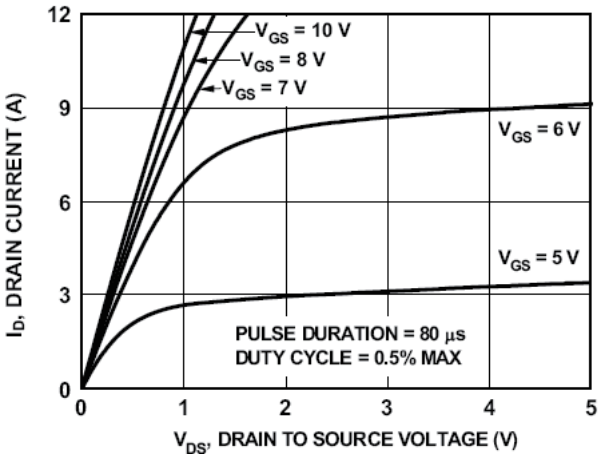


Figure4. Transfer characteristics

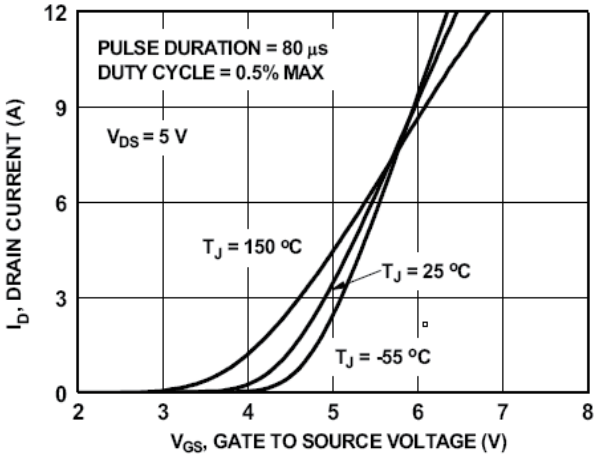


Figure5. Static drain-source on resistance

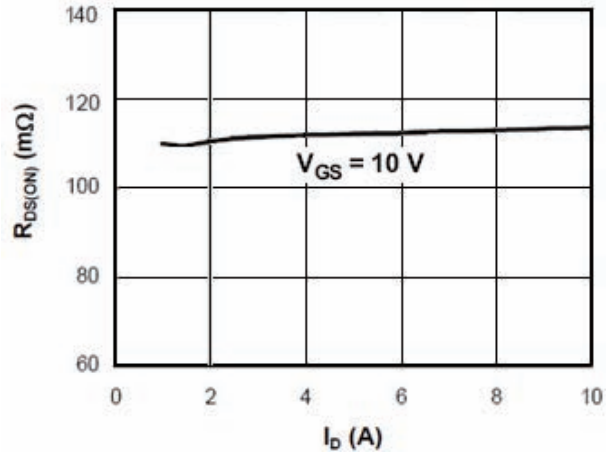


Figure6. $R_{DS(ON)}$ vs Junction Temperature

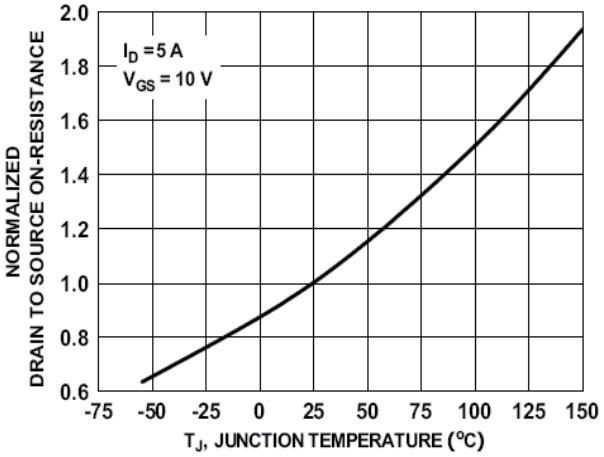


Figure7. BV_{DSS} vs Junction Temperature

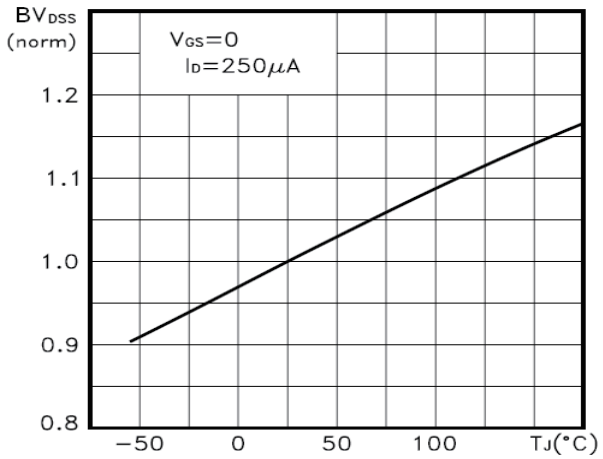


Figure8. $V_{GS(th)}$ vs Junction Temperature

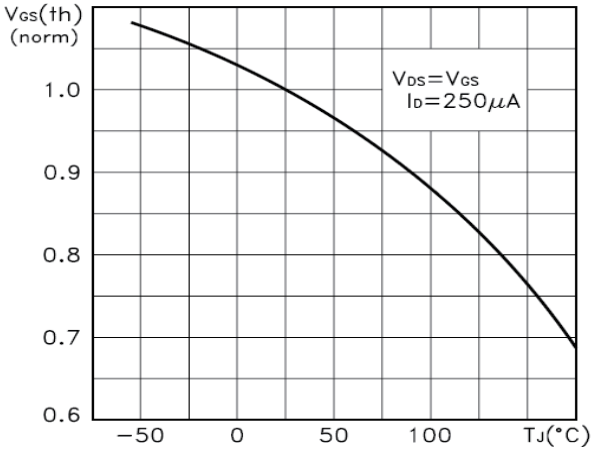


Figure9. Gate charge waveforms

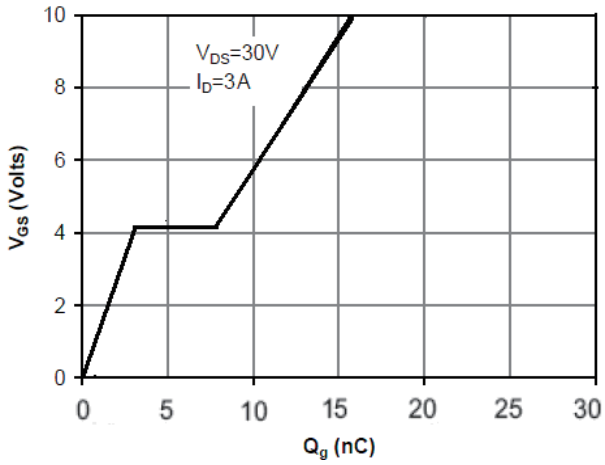


Figure10. Capacitance