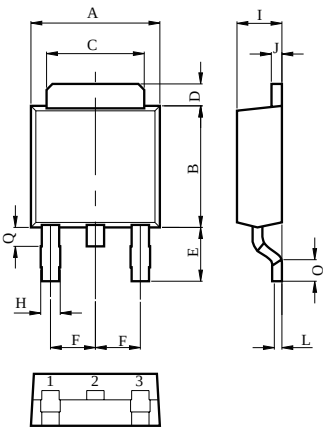
N-Channel Power MOSFET



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)

GENERAL DESCRIPTION

The FTK80N03D uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge.

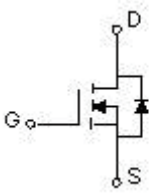
It can be used in awide variety of applications.

FEATURE

- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

APPLICATION

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain- Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current	I_{DM}	320	A
Single Pulsed Avalanche Energy	E_{AS}(1)	306	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\Theta JA}$	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	- 55 ~ +150	℃
Lead Temperature for Soldering Purposes(1/8'' from case for 10s)	T_L	260	℃

(1).E_{AS} condition: V_{DD}=20V,L=0.5mH, R_G=25Ω, Starting T_J = 25°C

ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D=250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
On characteristics (note1)						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0		3.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =10V, I_D=30A			6.5	mΩ
		V_{GS} =5V, I_D=24A			10	mΩ
Forward transconductance	g_{FS}	V_{DS} =5V, I_D=24A	20			S
Dynamic characteristics (note 2)						
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V, f =1MHz		2330		pF
Output capacitance	C_{oss}			460		
Reverse transfer capacitance	C_{rss}			230		
Switching characteristics (note 2)						
Total gate charge	Q_g	V_{DS}=10V, V_{GS}=10V, I_D=30A		51		nC
Gate-source charge	Q_{gs}			14		
Gate-drain charge	Q_{gd}			11		
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V,I_D=30A, V_{GS}=10V,R_G=2.7Ω		20		ns
Turn-on rise time	t_r			15		
Turn-off delay time	$t_{d(off)}$			60		
Turn-off fall time	t_f			10		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V_{SD}	V_{GS} =0V, I_S=24A			1.2	V
Continuous drain-source diode forward current	I_S				80	A
Pulsed drain-source diode forward current	I_{SM}				320	A

Notes:

1. Pulse Test : Pulse Width≤300μs, duty cycle≤2%.
2. Guaranteed by design, not subject to production.

Typical Electrical and Thermal Characteristics (Curves)

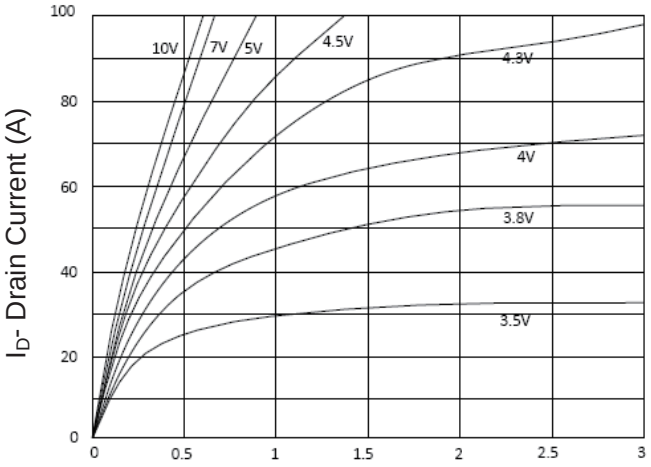


Figure 1 Output Characteristics

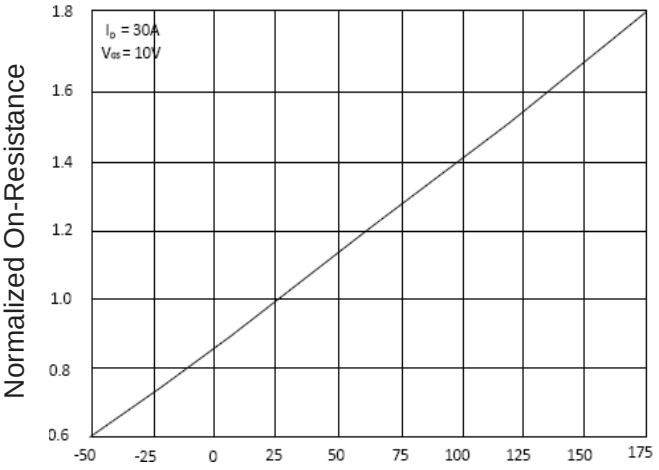


Figure 4 Rdson-JunctionTemperature

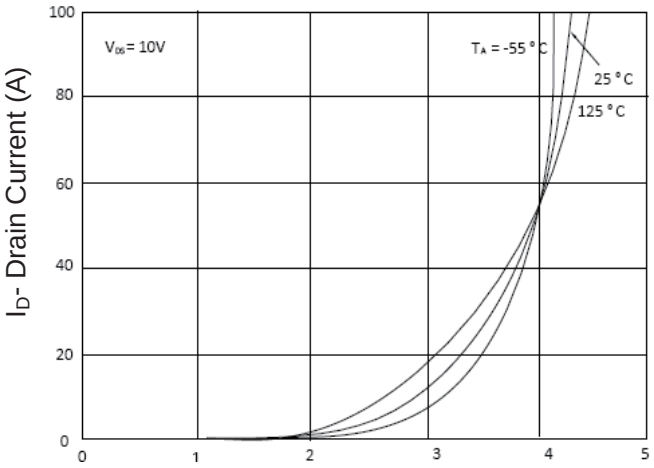


Figure 2 Transfer Characteristics

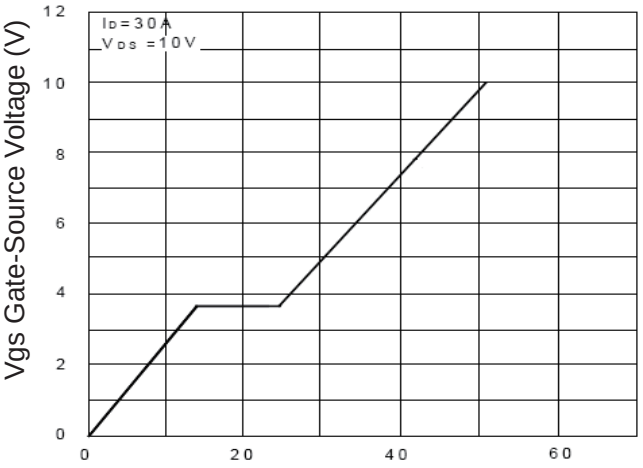


Figure 5 Gate Charge

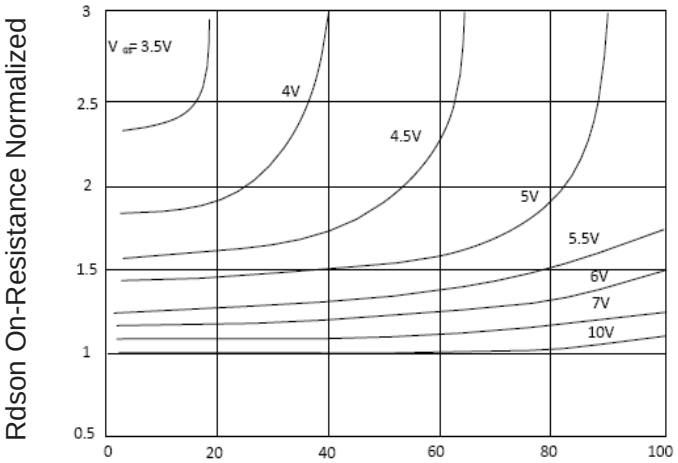


Figure 3 Rdson- Drain Current

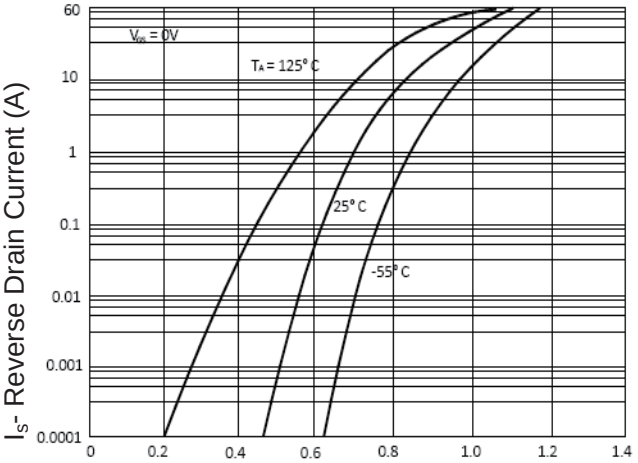


Figure 6 Source- Drain Diode Forward

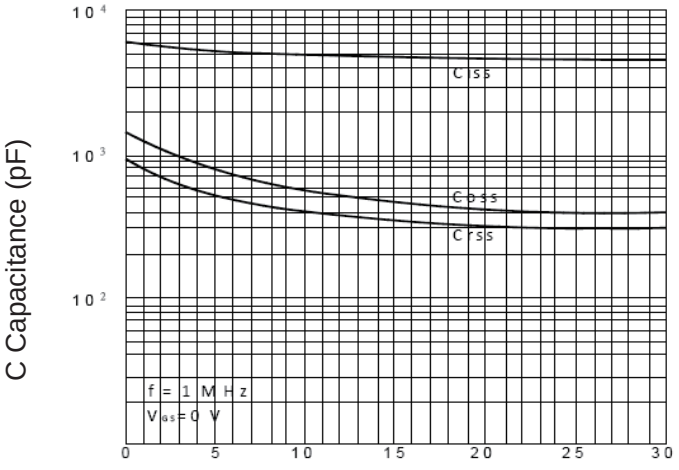


Figure 7 Capacitance vs Vds

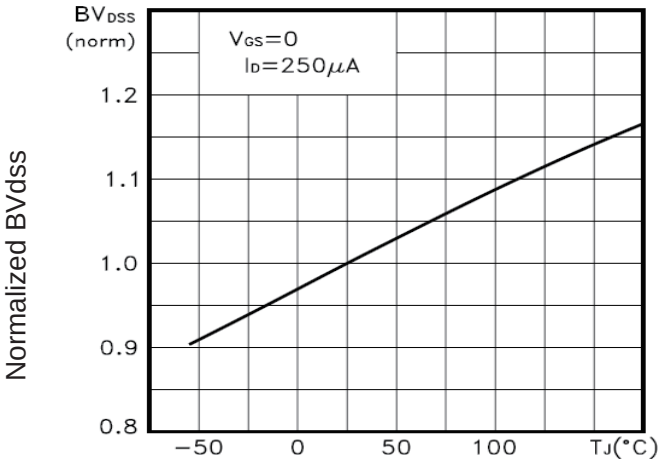


Figure 9 BV_{DSS} vs Junction Temperature

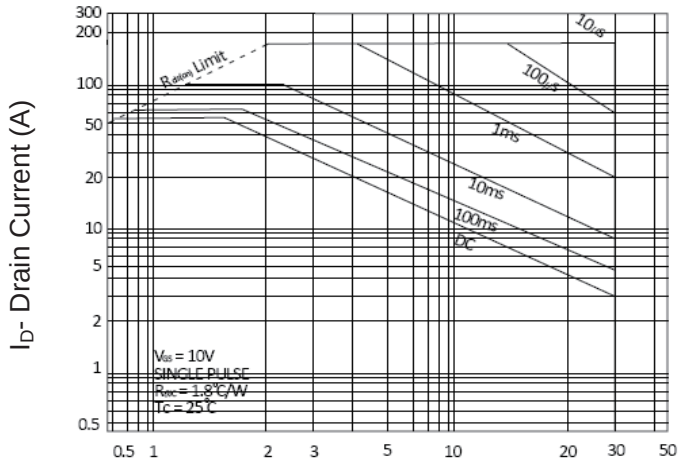


Figure 8 Safe Operation Area

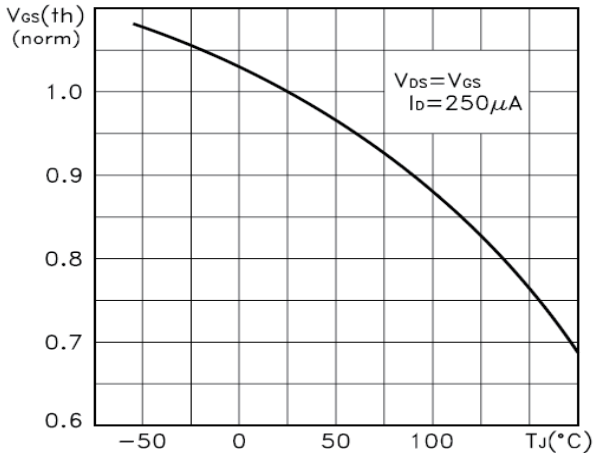


Figure 10 $V_{GS(th)}$ vs Junction Temperatur

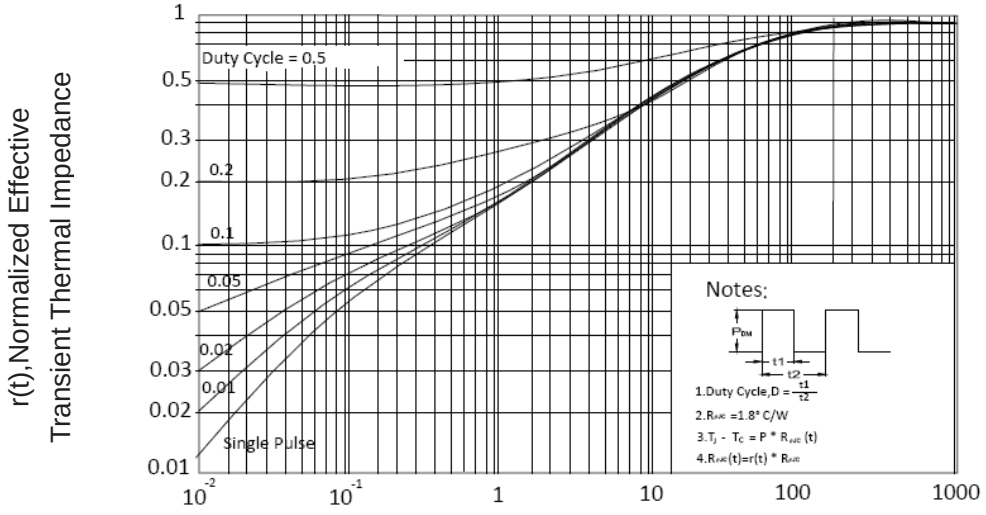


Figure 11 Normalized Maximum Transient Thermal Impedance