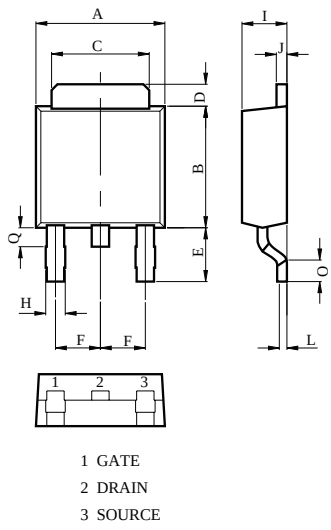
N-Channel MOSFET

DESCRIPTION

The FTK4822D uses advanced trench te chnology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

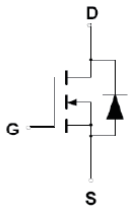


DIM	MILLIMETERS
A	6 50 ± 0 2
B	5 60 ± 0 2
C	5 20 ± 0 2
D	1 50 ± 0 2
E	2 70 ± 0 2
F	2 30 ± 0 1
H	1 00 MAX
I	2 30 ± 0 2
J	0 5 ± 0 1
L	0 50 ± 0 10
O	1 6 ± 0 2
Q	0 95 MAX

D-PAK (TO-252)

FEATURES

VDS (V) = 30V
ID = 36A (VGS = 10V)
RDS(ON) < 16mΩ (VGS = 10V)
RDS(ON) < 26mΩ (VGS = 4.5V)



ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (t ≤10s) (note 1)	I_D	36	A
Pulsed Drain Current (note 2)	I_{DM}	144	A
Power Dissipation @ TC = 25 C	P_D	42	W
Thermal Resistance from Junction to Ambient (t ≤10s) (note 1)	$R_{\theta JA}$	50	℃/W
Thermal Resistance, Junction-to-Case (note 2)	$R_{\theta JC}$	3	℃/W
Junction Temperature	T_J	-55~+150	℃
Storage Temperature	T_{STG}	-55~+150	℃

Electrical characteristics (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1		3	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	V_{GS} =10V, I_D =8.5A			16	mΩ
		V_{GS} =4.5V, I_D =6A			26	mΩ
Forward tranconductance (note 3)	g_{FS}	V_{DS} =5V, I_D =8.5A		20		S
Diode forward voltage (note 3)	V_{SD}	I_S=1A, V_{GS} = 0V			1	V
DYNAMIC PARAMETERS (note 4)						
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f =1MHz			1250	pF
Output capacitance	C_{oss}			180		pF
Reverse transfer capacitance	C_{rss}			110		pF
SWITCHING PARAMETERS (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V,V_{DS}=15V, R_L=1.8Ω,R_{GEN}=3Ω			7.5	ns
Turn-on rise time	t_r				6.5	ns
Turn-off delay time	$t_{d(off)}$				25	ns
Turn-off fall time	t_f				5	ns
Total gate charge (10V)	Q_g	V_{DS} =15V,V_{GS} =10V,I_D =8.5A			23	nC
Total gate charge (4.5V)					11.2	nC
Gate-source charge	Q_{gs}			2.6		nC
Gate-drain charge	Q_{gd}			4.2		nC

Notes :

1. The value of $R_{\theta JA}$ is measure with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25℃. The value in any given application depends on the user's specific board design. The current rating is based on the t≤10s thermal resistance rating.
2. Repetitive rating : Pulse width limited by junction temperature.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.
4. Guaranteed by design, not subject to production testing.

Typical Characteristics

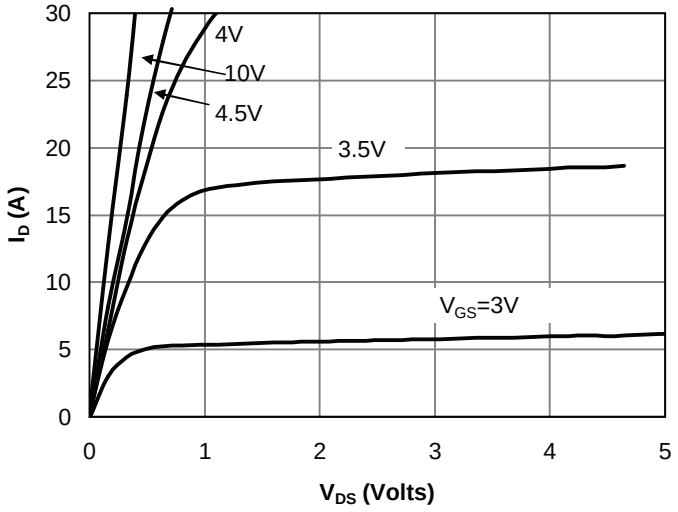


Fig 1: On-Region Characteristics

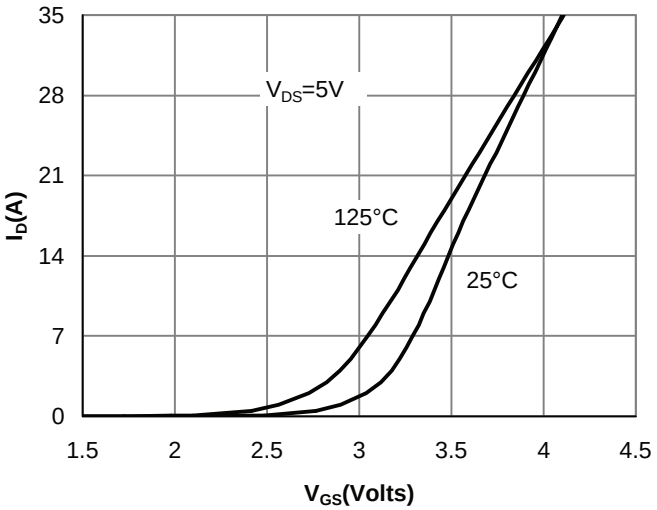


Figure 2: Transfer Characteristics

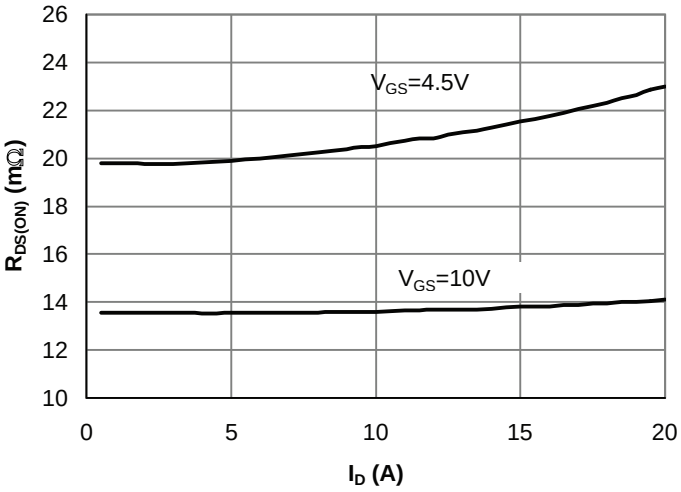


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

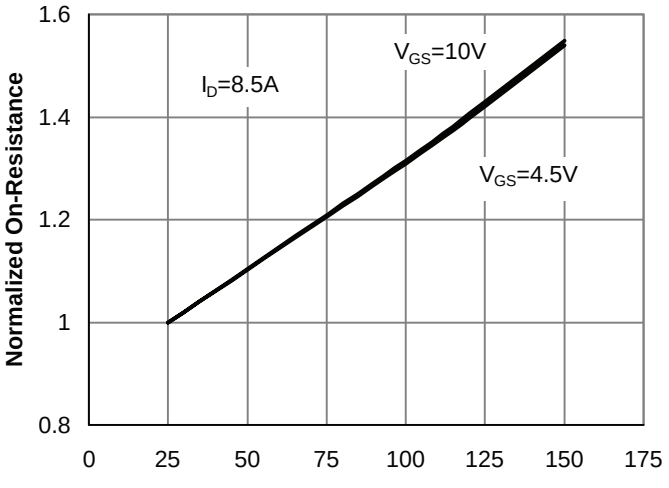


Figure 4: On-Resistance vs. Junction Temperature

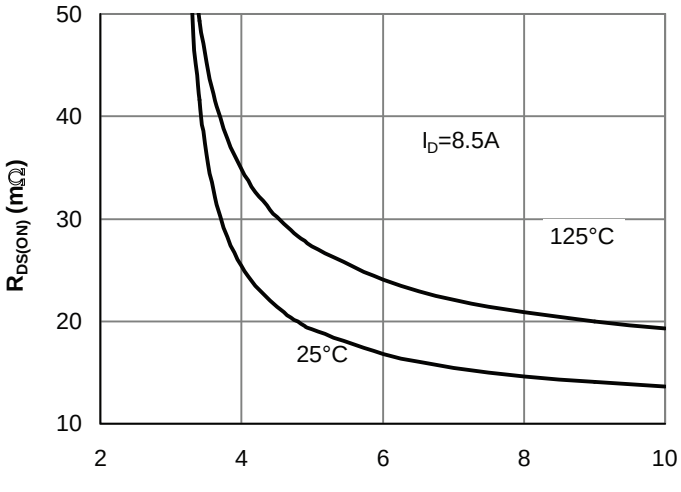


Figure 5: On-Resistance vs. Gate-Source Voltage

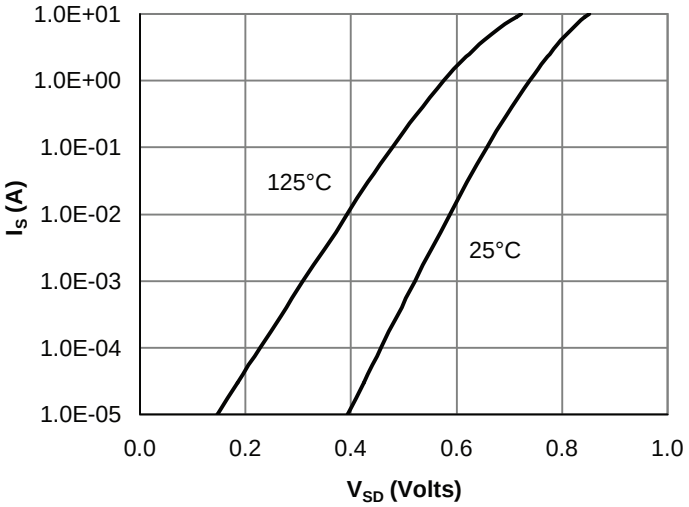


Figure 6: Body-Diode Characteristics

Typical Characteristics

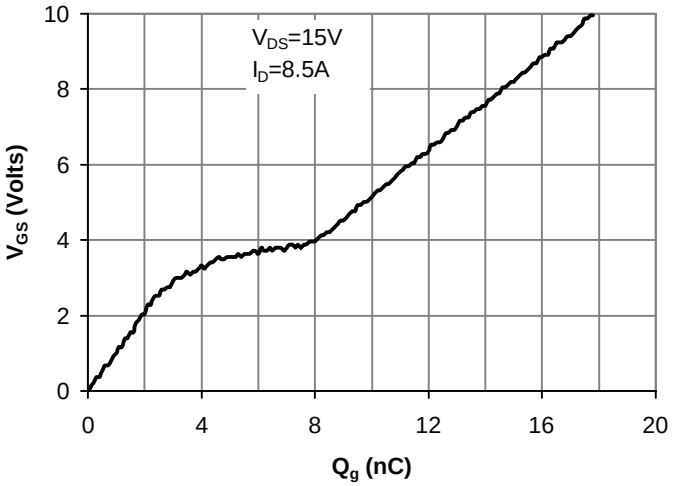


Figure 7: Gate-Charge Characteristics

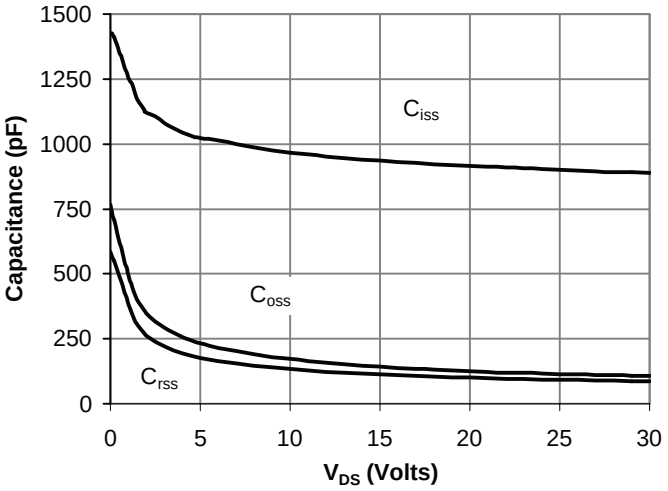


Figure 8: Capacitance Characteristics

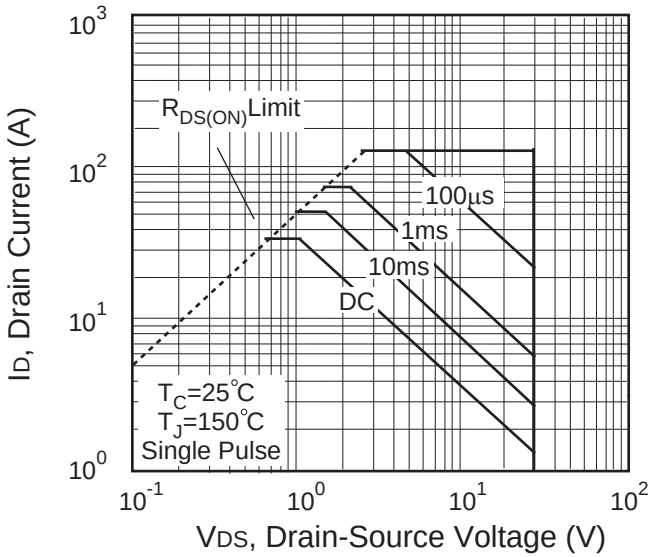


Figure 9. Maximum Safe Operating Area

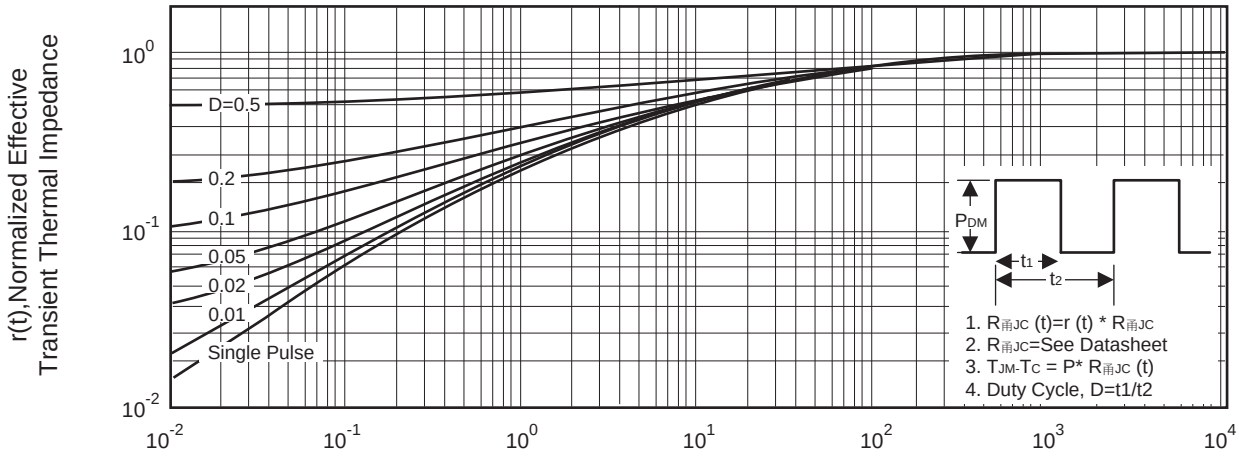


Figure 10. Normalized Thermal Transient Impedance Curve