

N-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	100V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	5.3m Ω

FEATURES

- Best-in-Class FOM
- Low Gate Charge
- High Current Capability

Package Outline Dimensions millimeters

T0-252

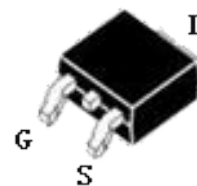
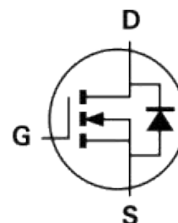
Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.95	1.55
B1	0.6	0.8
B2	0.75	0.95
C	Typ0.5	
D	5.3	5.5
D1	3.65	4.05
E	5.8	6.4
E1	Typ2.3	
E2	Typ4.6	
O	0	0.15
L1	9	11
L2	Typ1.5	
L3	0.7	1
All Dimensions in millimeter		

APPLICATIONS

- Power Management in Telecom.,Industrial Automation
- Motor Driving in Power Tool,E-vehicle,Robotics
- Current Switching in DC/DC&AC/DC(SR) Sub-system

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum,10s per JESD 22-B106



TO-252

Product specification classification

Part Number	Package	Mode Name	Pack
FTK80N10D	T0-252	FTK80N10	Tape

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Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continue Drain Current	I_D	80	A
Pulsed Drain Current (Note1)	I_{DM}	320	A
Power Dissipation	P_D	96	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	497	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.7	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	50	°C/W

Note1:Pulse test: 300 μ s pulse width, 2 % duty cycle

Electrical Characteristics at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	BV_{DSS}	100	-	-	V
Drain-Source Leakage Current	$V_{DS} = 100 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	1.2	-	2.5	V
Drain-Source On-State Resistance	$V_{GS} = 10 \text{ V}, I_D = 20 \text{ A}$	$R_{DS(on)}$	-	5.3	6.4	m Ω
	$V_{GS} = 4.5 \text{ V}, I_D = 15 \text{ A}$	$R_{DS(on)}$	-	7.5	9.4	m Ω
Input Capacitance	$V_{DS}=50 \text{ V}, V_{GS}=0 \text{ V}, f=1 \text{ MHz}$	C_{iss}	-	2420	-	pF
Output Capacitance		C_{oss}	-	900	-	pF
Reverse Transfer Capacitance		C_{rss}	-	35	-	pF
Turn-on Delay Time(Note2)	$V_{DD}=50 \text{ V}, V_{GS}=10 \text{ V}, R_G=3 \Omega, I_D=20 \text{ A}$	$t_{d(ON)}$	-	11.2	-	ns
Rise Time(Note2)		t_r	-	23	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	38	-	ns
Fall Time(Note2)		t_f	-	15.3	-	ns
Total Gate Charge(Note2)	$V_{DS}=50 \text{ V}, V_{GS}=10 \text{ V}, I_D=20 \text{ A}$	Q_G	-	43	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	9.4	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	10.3	-	nC

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	80	A
Drain-Source Diode Forward Voltage	$V_{GS}=0 \text{ V}, I_S=20 \text{ A}, T_J=25^\circ\text{C}$	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	$T_J = 25^\circ\text{C}, I_F= 20 \text{ A}$ $di / dt = 100 \text{ A}/\mu\text{s}$	t_{rr}	-	42	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	46	-	nC

Note2:Pulse test: 300 μ s pulse width, 2 % duty cycle

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RATINGS AND CHARACTERISTIC CURVES

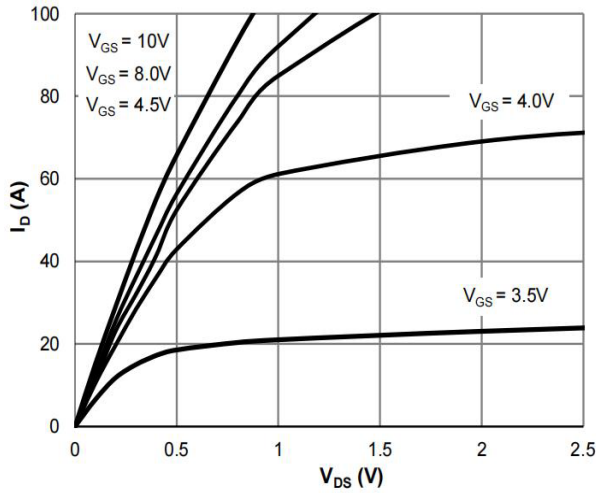


Figure 1: Saturation Characteristics

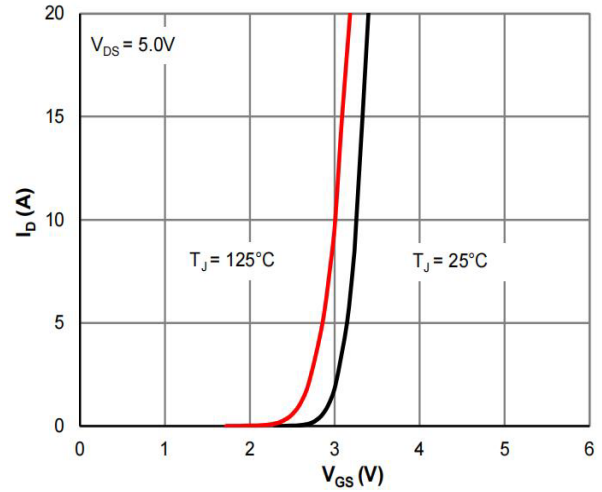


Figure 2: Transfer Characteristics

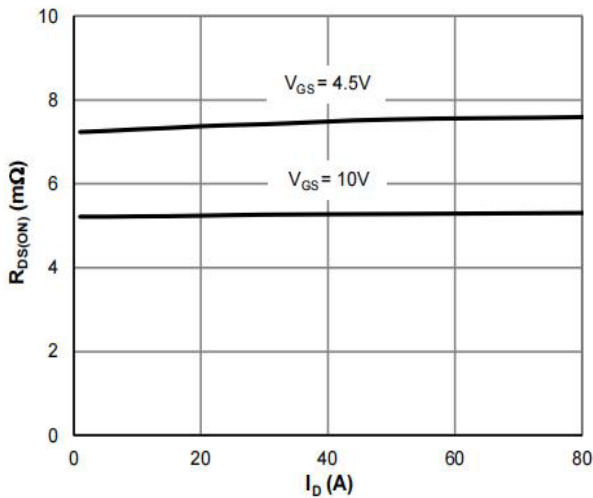


Figure 3: $R_{DS(ON)}$ vs. Drain Current

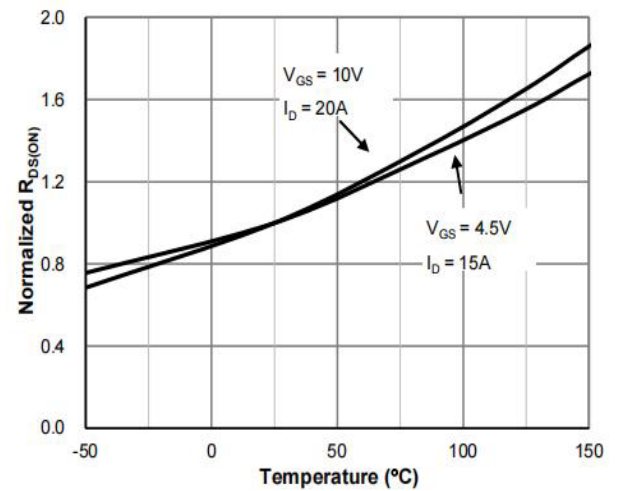


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

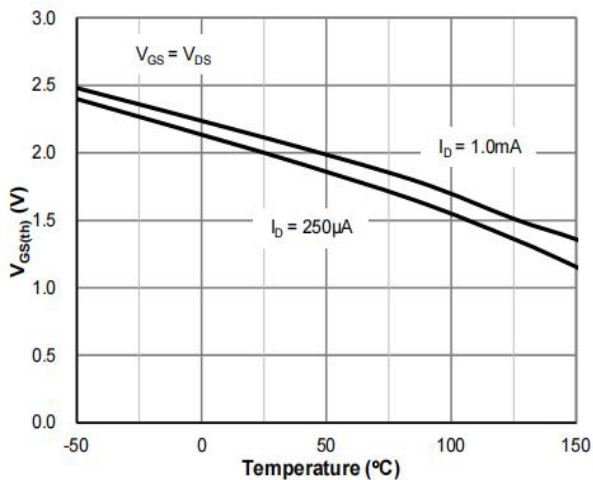


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

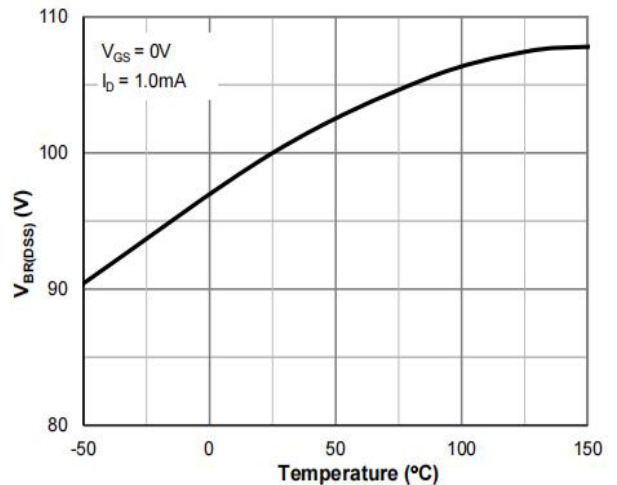


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

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RATINGS AND CHARACTERISTIC CURVES

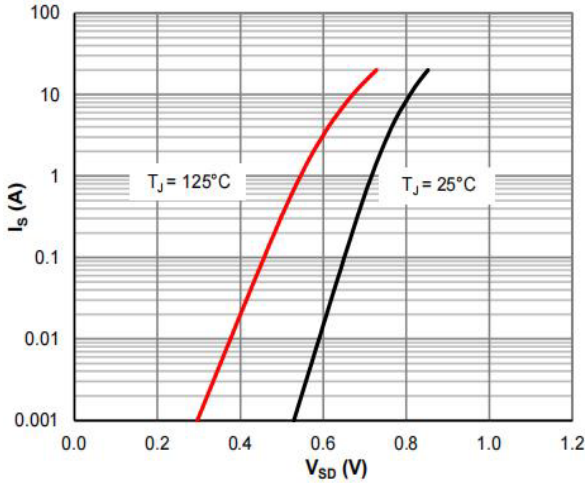


Figure 7: Body-Diode Characteristics

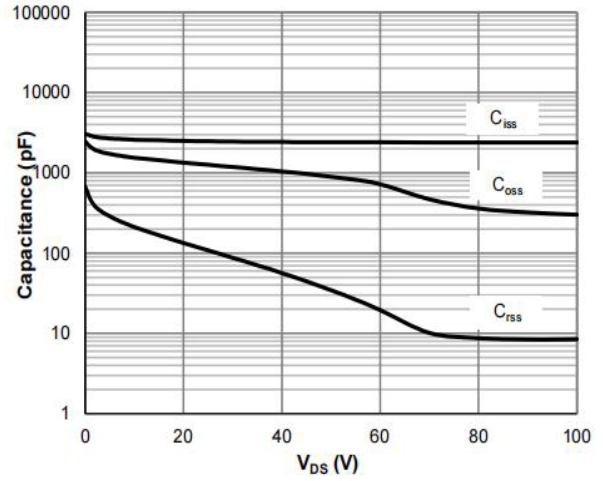


Figure 8: Capacitance Characteristics

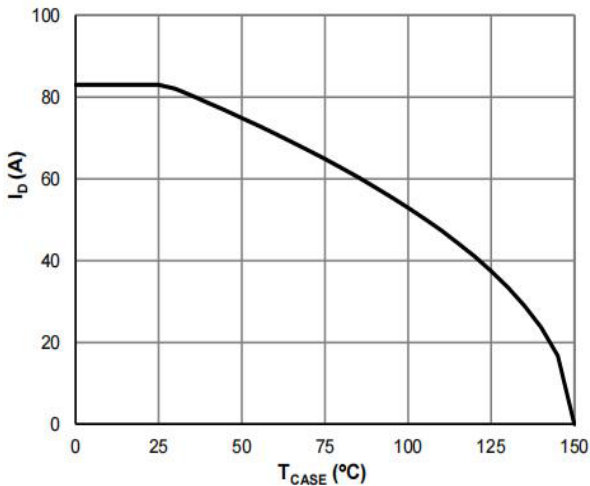


Figure 9: Current De-rating

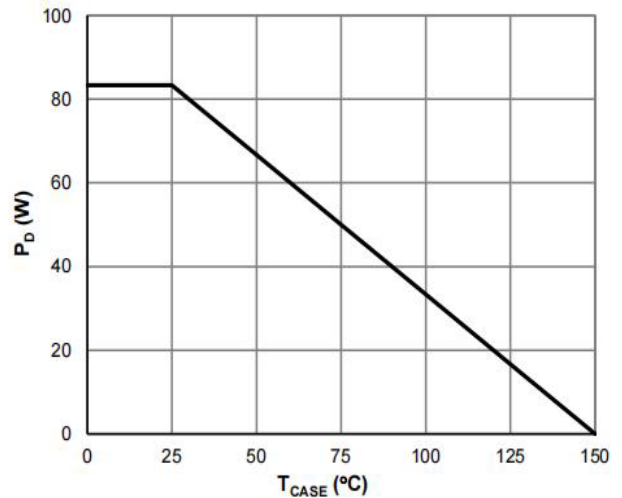


Figure 10: Power De-rating

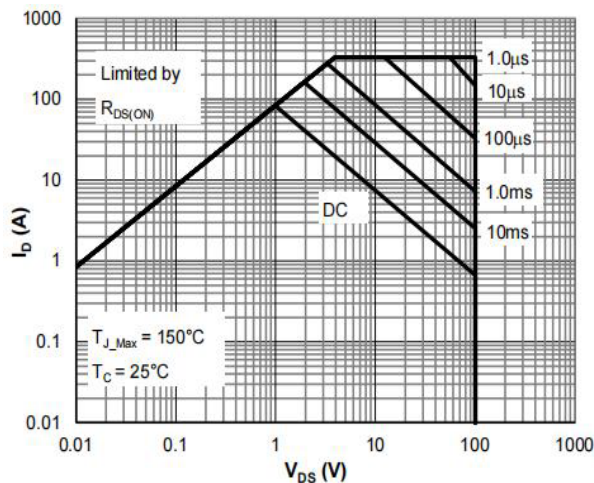


Figure 11: Maximum Safe Operating Area

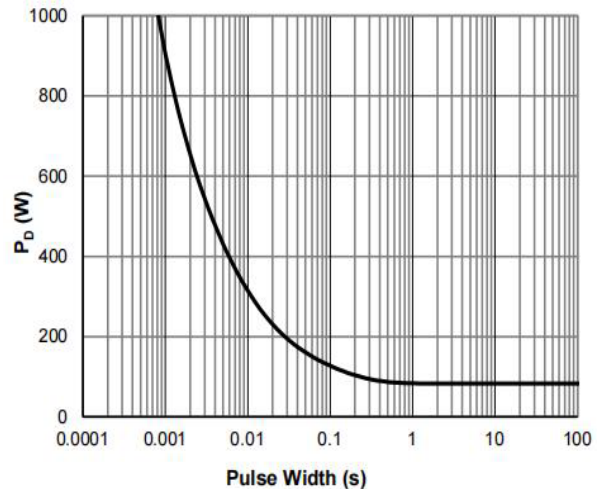


Figure 12: Single Pulse Power Rating, Junction-to-Case