N-Channel 100V(D-S) MOSFET

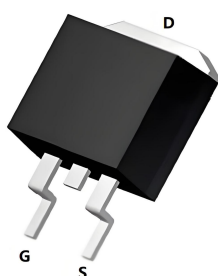| Product summary		
V_{DS}	100	V
$R_{DS(ON)}$(at V_{GS}=10V) Typ.	4.5	mΩ
I_D(Tc=25℃)	110	A

Features

● Low $R_{DS(ON)}$
● Fast switching
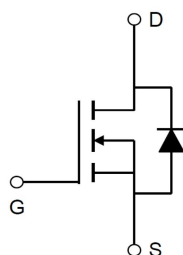● Extremely low switching loss

Applications

● Power switching application
● Uninterruptible power supply

Pin Configuration

TO-263

Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECFC110N10B	TO-263	13″	800pcs

Absolute Maximum Ratings (at T_A=25℃ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		100	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current [A]	T_C=25℃	110	A
		T_C=100℃	70	A
I_{DM}	Pulse Drain Current Tested [B]		440	A
E_{AS}	Single Pulse Avalanche Energy [C]		400	mJ
P_D	Power Dissipation	T_C=25℃	260	W
T_J,T_{STG}	Junciton and Storage Temperature Range		-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{θJA}$	Thermal Resistance-Junction to ambient [A]	60	℃/W

ECFC110N10B

Electrical Characteristics (at T_J =25℃ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V,V_{GS}=0V	--	--	1	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±20V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	2.0	2.8	4.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [B]	V_{GS}=10V,I_D=20A	--	4.5	5.2	mΩ
V_{SD}	Diode Forward Voltage	I_S=20A,V_{GS}=0V	--	--	1.2	V
I_S	Maximum Body-Diode Continuous Current		--	--	110	A
Rg	Gate resistance	f=1MHZ,Open drain	--	0.9	--	Ω
Dynamic Parameters [D]						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=50V f=1MHZ	--	4600	--	pF
C_{oss}	Output Capacitance		--	1250	--	pF
C_{rss}	Reverse Transfer Capacitance		--	43	--	pF
Q_g	Total Gate Charge	V_{DS}=50V,I_D=20A V_{GS}=10V	--	66	--	nC
Q_{gs}	Gate-Source Charge		--	23	--	nC
Q_{gd}	Gate-Drain Charge		--	6.6	--	nC
$t_{D(on)}$	Turn-on Delay Time	V_{DD}=50V, I_D=20A, R_{GEN}=2.2Ω, V_{GS}=10V	--	17.6	--	ns
t_r	Turn-on Rise Time		--	30.2	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	33.6	--	ns
t_f	Turn-off Fall Time		--	39.6	--	ns
t_{rr}	Reverse recovery time	I_F= 20A, di/dt=100 A/uS	--	93	--	ns
Q_{rr}	Reverse recovery charge		--	63	--	nC

A. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

B. The data tested by pulsed , pulse width≦300us , duty cycle≦2%.

C. The EAS data shows Max. rating . The test condition is V_{DD}=50V,Rg=25Ω,L=2mH,I_{AS}=31A.

D. Guaranteed by design, not subject to production testing.
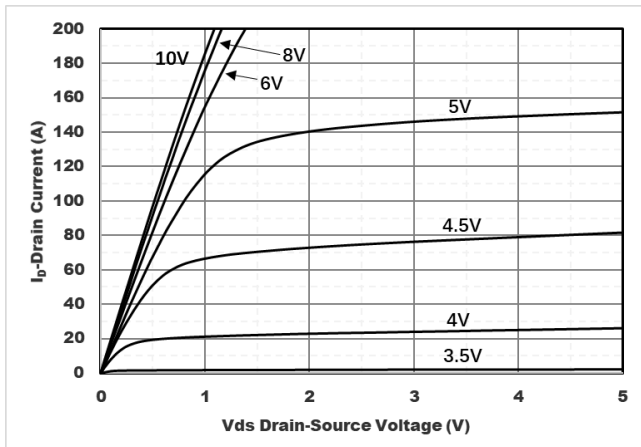
Typical Characteristics

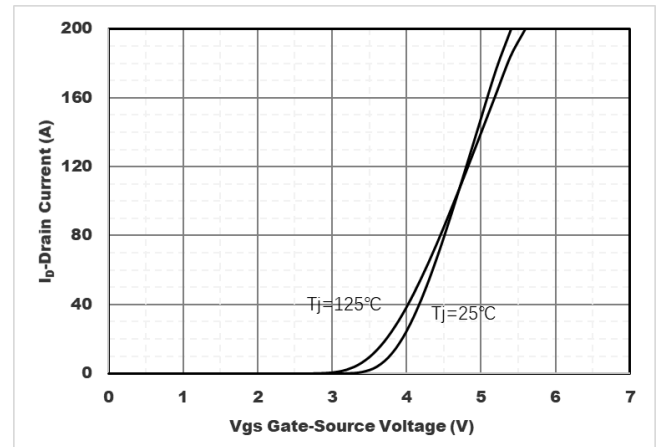Figure1. Output Characteristics

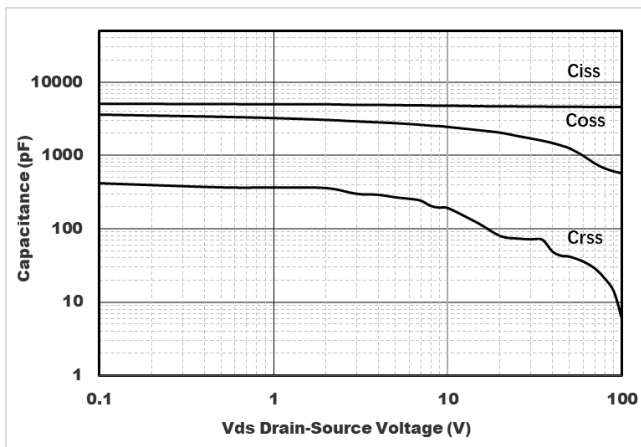Figure2. Transfer Characteristics
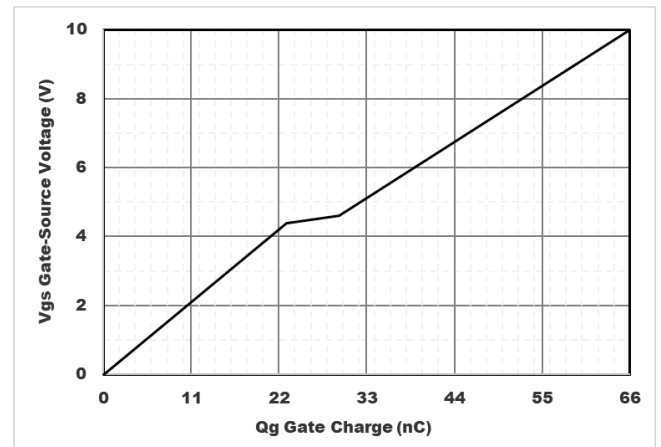

Figure3. Capacitance Characteristics
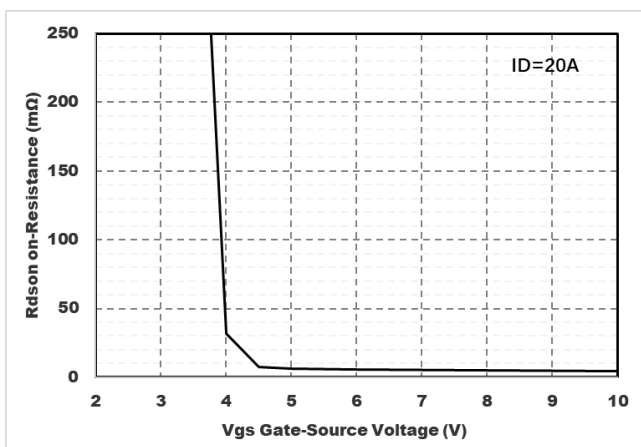

Figure4. Gate Charge

Figure5. : On-Resistance vs. Drain Current and Gate Voltage
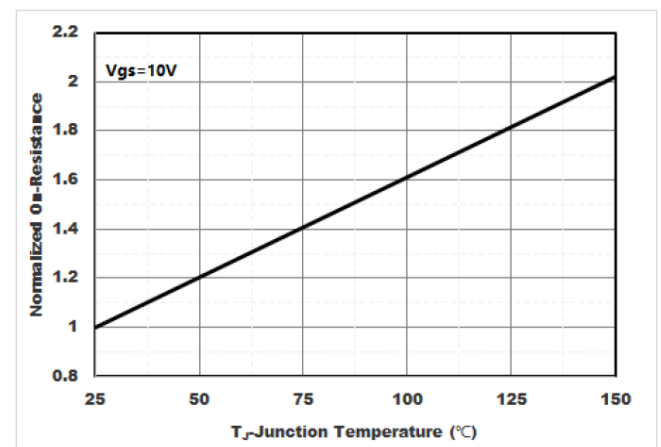

Figure6.Normalized On-Resistance
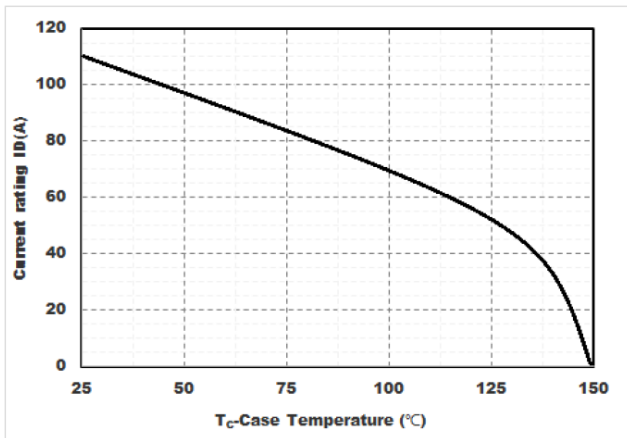
Typical Characteristics

Figure7. Drain current
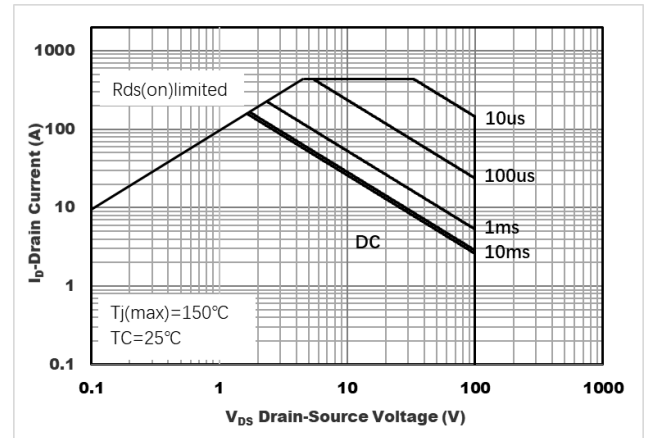

Figure8.Safe Operation Area
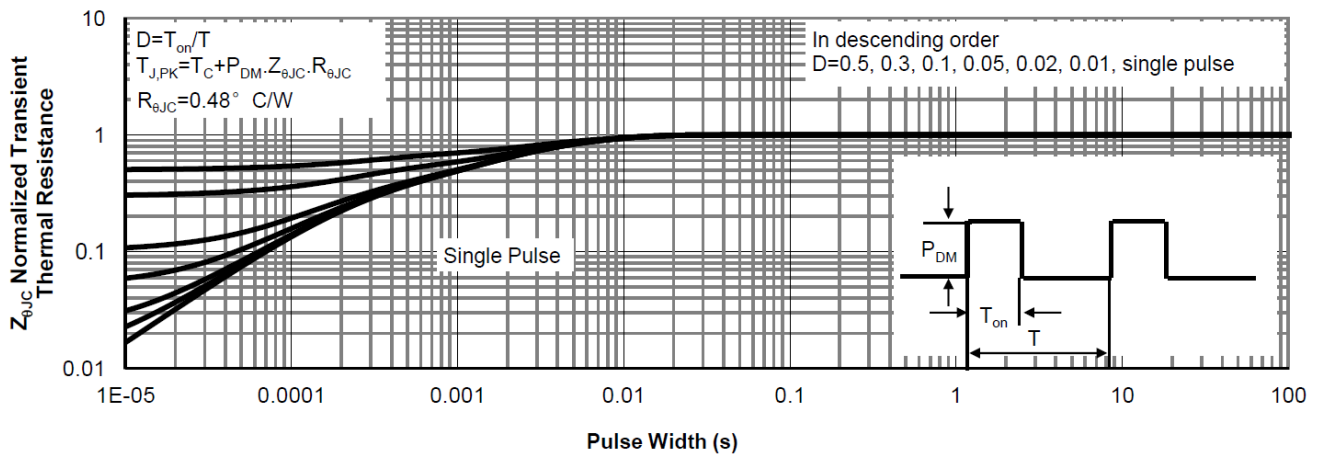
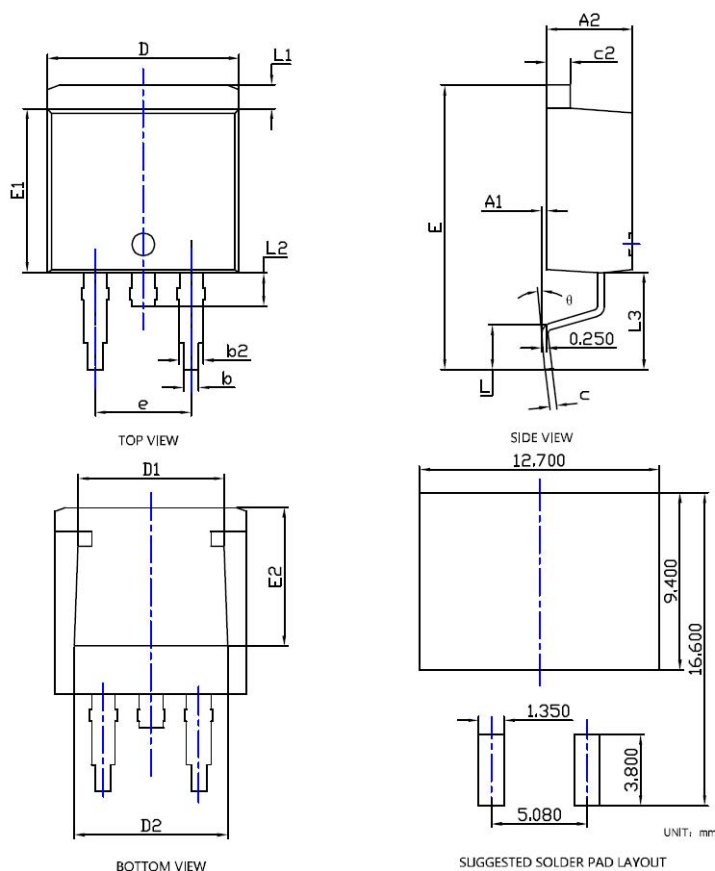Figure9.Normalized Maximum Transient thermal impedance

TO-263 Package Information

TOP VIEW

SIDE VIEW

BOTTOM VIEW

SUGGESTED SOLDER PAD LAYOUT

UNIT: mm

SYMBOL	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.010	0.000	---	0.250
A2	0.174	0.180	0.186	4.430	4.580	4.730
b	0.028	0.032	0.036	0.720	0.820	0.920
b2	0.046	0.050	0.054	1.180	1.280	1.380
c	0.013	0.015	0.018	0.330	0.390	0.450
c2	0.048	0.050	0.053	1.220	1.280	1.34
D	0.394	0.400	0.406	10.000	10.150	10.300
D1	0.295	0.307	0.319	7.500	7.800	8.100
D2	0.303	0.315	0.327	7.700	8.000	8.300
E	0.571	0.591	0.610	14.500	15.000	15.500
E1	0.337	0.341	0.348	8.550	8.700	8.850
E2	0.276	0.287	0.299	7.000	7.300	7.600
e	0.200BSC			5.080BSC		
L	0.070	---	0.110	1.790	---	2.790
L1	0.044	---	0.056	1.120	---	1.420
L2	0.030	---	0.070	0.770	---	1.770
L3	0.197REF			5.000REF		
θ	0°	---	8°	0°	---	8°

NOTE:
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.