N-Channel 150V(D-S) MOSFET

Product summary		
V_{DS}	150	V
$R_{DS(ON)}$(at V_{GS}=10V) Typ.	5.7	mΩ
I_D(Tc=25℃)	115	A

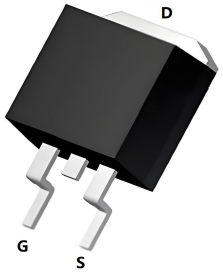
Features

- Split gate trench MOSFET technology
- High density cell design for low $R_{DS(ON)}$

Applications

- PWM Application
- Load switching
- DC-DC convertor

Pin Configuration



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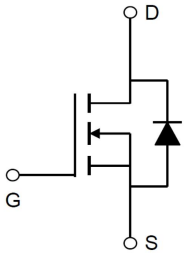


Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECFC115N15G	TO-263	13″	800pcs

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

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		150	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25℃	115	A
		T_C=100℃	73	A
I_{DM}	Pulse Drain Current Tested [A]		460	A
E_{AS}	Single Pulse Avalanche Energy [B]		361	mJ
P_D	Power Dissipation	T_C=25℃	220	W
T_J,T_{STG}	Junciton and Storage Temperature Range		-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JC}$	Thermal Resistance-Junction to case	0.57	℃/W
$R_{\theta JA}$	Thermal Resistance-Junction to ambient	62	℃/W

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	150	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V,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	2.4	3.0	3.6	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [B]	V_{GS}=10V,I_D=40A	--	5.7	6.8	mΩ
Dynamic Parameters [D]						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=75V f=1MHZ	--	6200	--	pF
C_{oss}	Output Capacitance		--	470	--	pF
C_{rss}	Reverse Transfer Capacitance		--	9	--	pF
Rg	Gate Resistance	f = 1MHz	--	0.6	--	Ω
Q_g	Total Gate Charge	V_{DS}=75V,I_D=50A V_{GS}=10V	--	75	--	nC
Q_{gs}	Gate-Source Charge		--	25	--	nC
Q_{gd}	Gate-Drain Charge		--	12	--	nC
$t_{D(on)}$	Turn-on Delay Time	V_{DD}=75V,V_{GS}=10V, I_D=50A, R_G=2.7Ω	--	4.4	--	ns
t_r	Turn-on Rise Time		--	24.6	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	38	--	ns
t_f	Turn-off Fall Time		--	9.5	--	ns
Drain-Source Diode Characteristics						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	115	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	460	A
V_{SD}	Diode Forward Voltage	I_S=20A,V_{GS}=0V	--	--	1.2	V
t_{rr}	Reverse recovery time	I_F=50A, di/dt=100 A/us	--	97	--	ns
Q_{rr}	Reverse recovery charge		--	217	--	nC

A. Repetitive Rating : Drain current limited by thepackage.

B. The EAS data shows Max. rating . The test condition is T_J=25°C,V_{DD}=100V,V_{GS}=10V,L=0.5mH,I_{AS}=38A.

C. The data tested by pulsed , pulse width≦300us , duty cycle≦0.5%.

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

Typical Characteristics

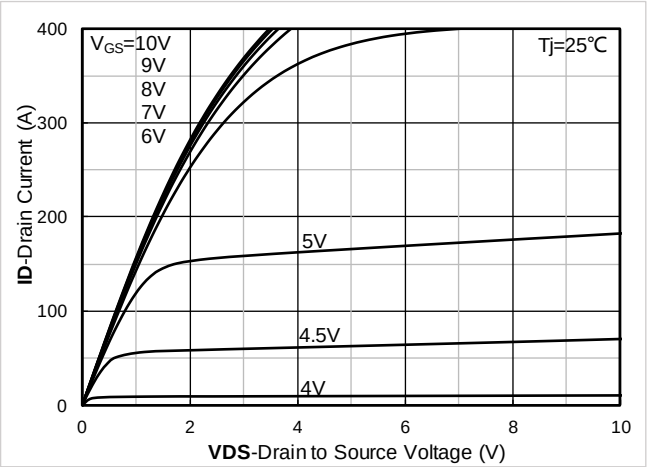


Figure 1. Output Characteristics

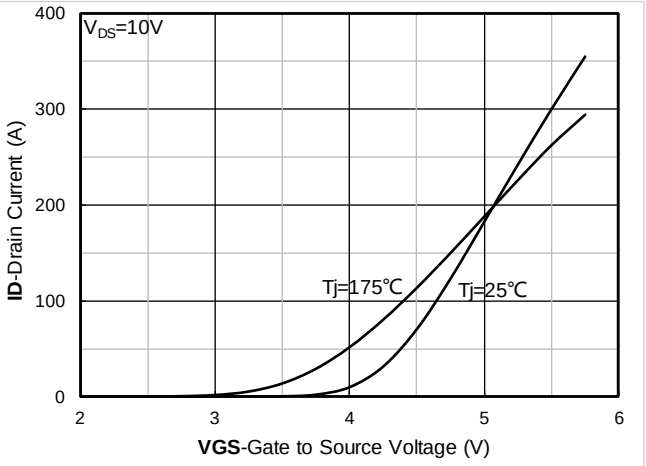


Figure 2. Transfer Characteristics

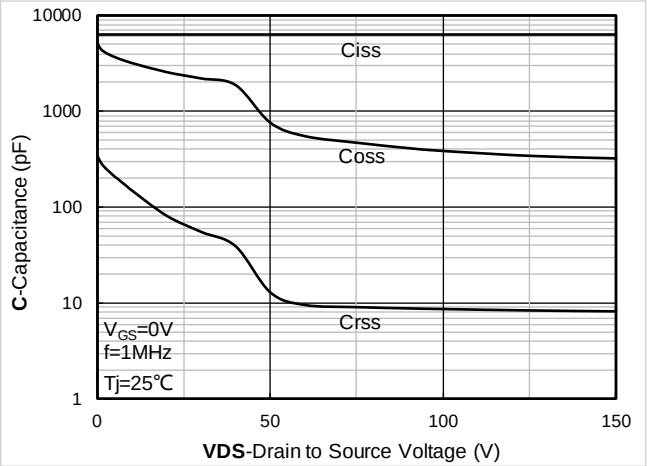


Figure 3. Capacitance Characteristics

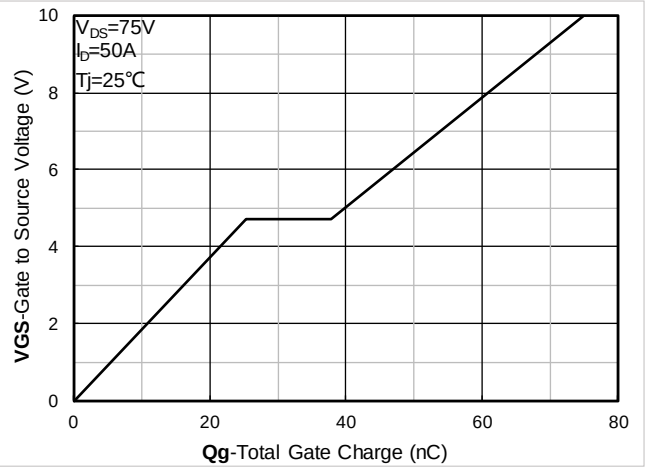


Figure 4. Gate Charge

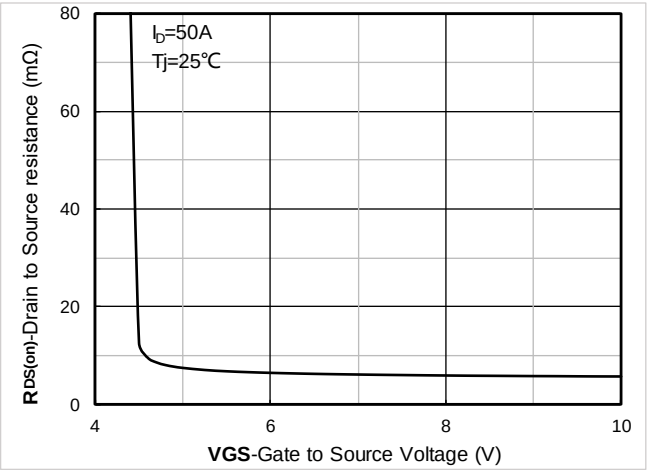


Figure 5. On-Resistance vs Gate to Source Voltage

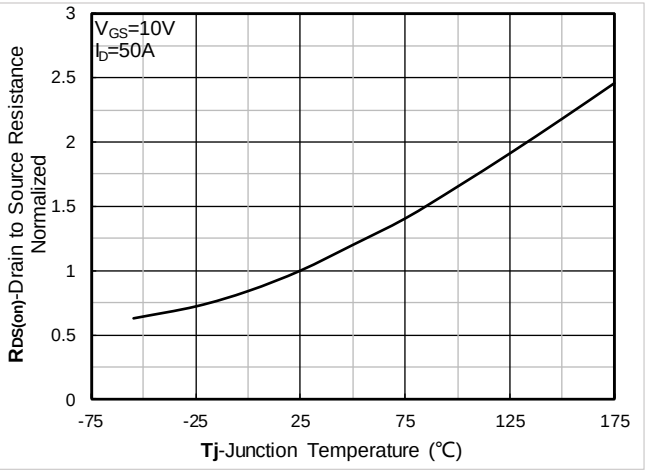


Figure 6. Normalized On-Resistance

Typical Characteristics

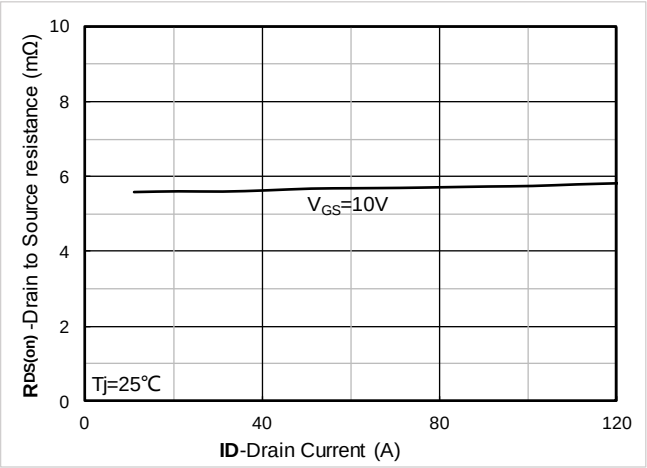


Figure 7. $R_{DS(on)}$ VS Drain Current

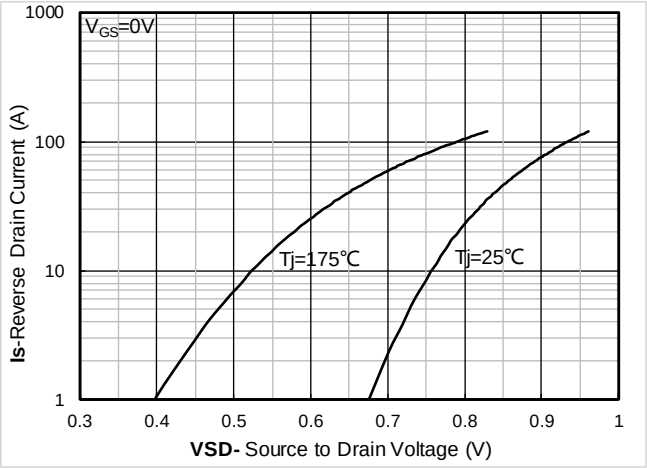


Figure 8. Forward characteristics of reverse diode

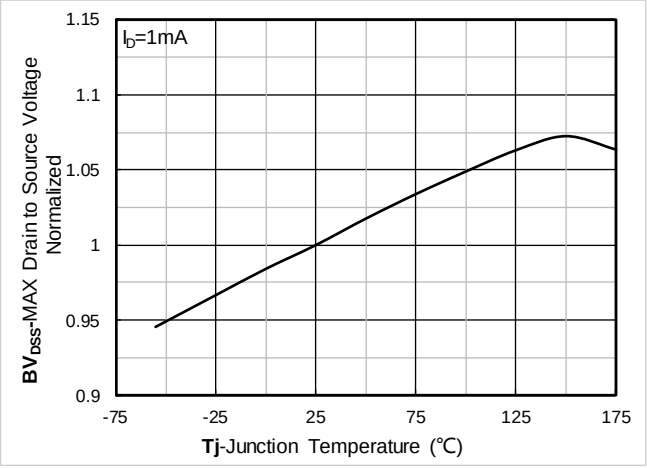


Figure 9. Normalized breakdown voltage

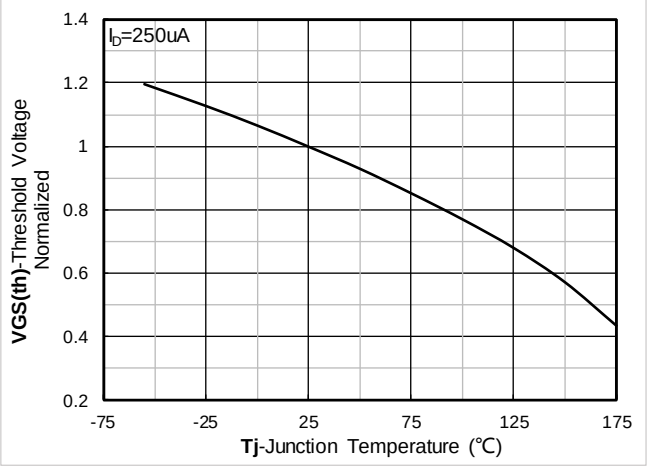


Figure 10. Normalized Threshold voltage

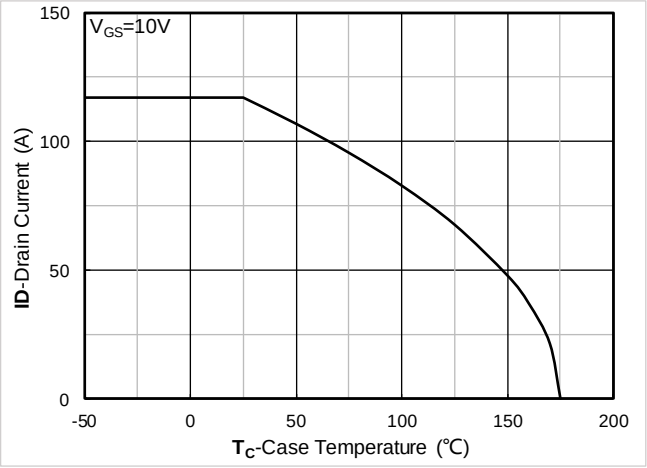


Figure 11. Current dissipation

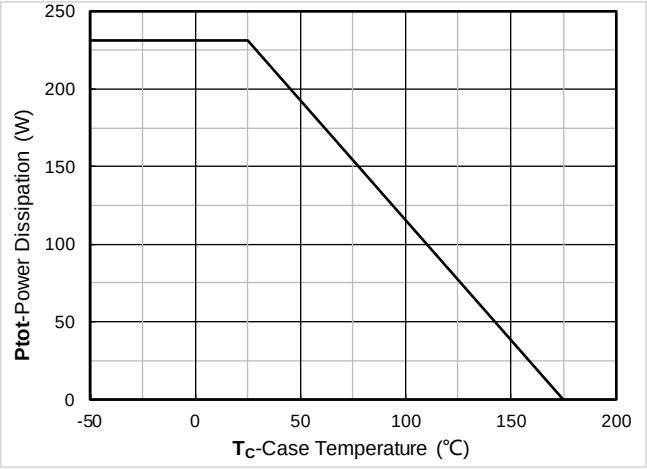


Figure 12. Power dissipation

Typical Characteristics

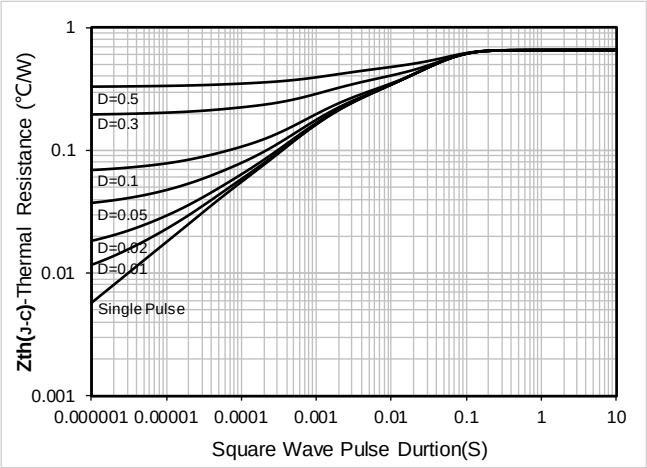


Figure 13. Maximum Transient Thermal Impedance

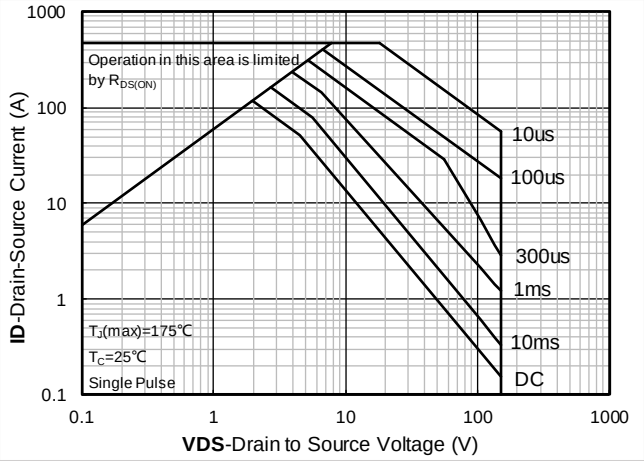
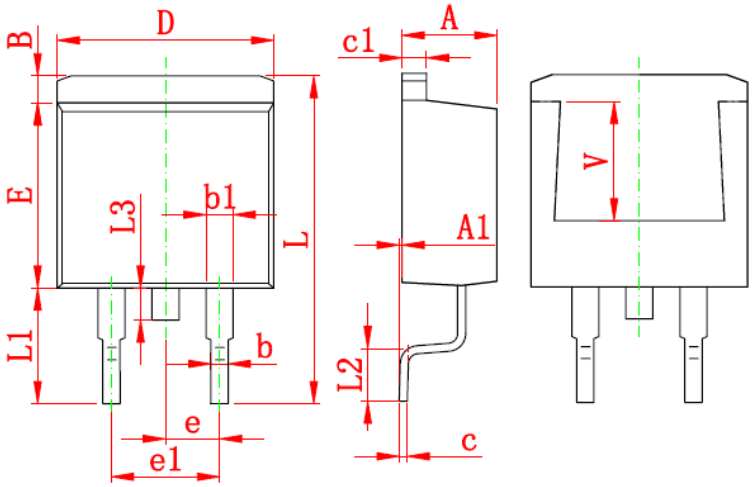


Figure 14. Safe Operation Area

TO-263 Package Information



*:Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184	E	8.500	8.900	0.335	0.350
A1	0.000	0.150	0.000	0.006	e	*2.540		*0.100	
B	1.170	1.370	0.046	0.054	e1	4.980	5.180	0.196	0.204
b	0.710	0.910	0.028	0.036	L	15.050	15.450	0.593	0.608
b1	1.170	1.370	0.046	0.054	L1	5.080	5.480	0.200	0.216
c	0.310	0.530	0.012	0.021	L2	2.340	2.740	0.092	0.108
c1	1.170	1.370	0.046	0.054	L3	1.300	1.700	0.051	0.067
D	10.010	10.310	0.394	0.406	V	5.600 REF		0.220 REF	

Notes : 1.Controlling dimension : millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

Material :

- Lead : Pure tin plated.
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0.