

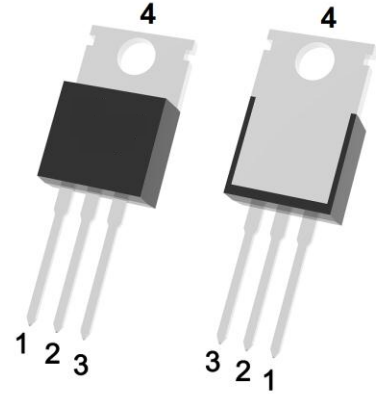


BCB4115F

N-CHANNEL MOSFET in a TO-220 Plastic Package

Features

$V_{DS} (V) = 150V$ $I_D = 80A (V_{GS} = \pm 20V)$
 $R_{DS(ON)}@10V \leq 10.5m\Omega$ (Typ. $8.7m\Omega$)
 HF Product.



PIN1 : G

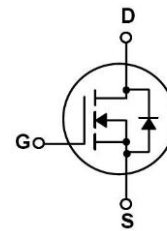
PIN 2、 4 : D

PIN 3 : S

Applications

Motor drivers, DC - DC Converter, Battery Management System.

/ Equivalent Circuit



Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	150	V
Drain Current*	$I_D(T_C=25^\circ C)$	80	A
	$I_D(T_C=100^\circ C)$	50	A
Pulsed Drain Current**	I_{DM}	320	A
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulsed Avalanche Energy ($L = 0.5 \text{ mH}, V_{DD} = 50 \text{ V}, I_{AS} = 36 \text{ A},$)	E_{AS}	324	mJ
Total Power Dissipation	$P_D(T_C=25^\circ C)$	150	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$
Thermal Resistance-Junction to Ambient**	$R_{\theta JA}$	45	$^\circ C/W$
Thermal Resistance-Junction to Case	$R_{\theta JC}$	0.8	

Notes :

* :The max drain current rating is silicon limited

** :Repetitive Rating: Pulse width limited by maximum junction temperature

Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	150			V
Drain Leakage Current	I_{DSS}	$V_{DS}=150V$ $V_{GS}=0V$			1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=20A$		8.7	10.5	m Ω
Input Capacitance	C_{iss}	$V_{DS}=75V$ $V_{GS}=0V$ $f=1MHz$		3690		pF
Output Capacitance	C_{oss}			320		
Reverse Transfer Capacitance	C_{rss}			15		
Gate Resistance	R_G	$f=1MHz$		1.2		Ω
Total Gate Charge	Q_g	$V_{DS}=75V$ $V_{GS}=10V$ $I_D=20A$		51		nC
Gate-Source Charge	Q_{gs}			18		
Gate-Drain Charge	Q_{gd}			10		

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DD}=75V$ $R_L=3.8\Omega$ $R_G=6.8\Omega$		23		ns
Turn-On Rise Time	t_r			40		
Turn-Off Delay Time	$t_{d(off)}$			48		
Turn-Off Fall Time	t_f			22		
Maximum Continuous Body-Diode Forward Current	I_S				80	A
Forward On Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1A$			1.3	V
Reverse Recovery Time	t_{rr}	$I_D = 20 A, V_{DD} = 75 V$ $di_{SD}/dt = 100 A/\mu s$		86		nS
Reverse Recovery Charge	Q_{rr}			265		nC
Peak Reverse Recovery Current	I_{rrm}			5		A

Electrical Characteristic Curve

BCB4115F

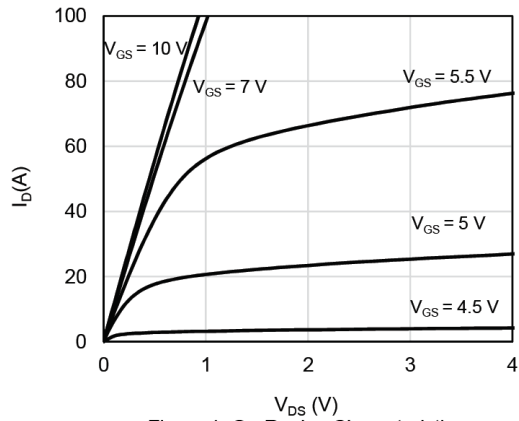


Figure 1: On-Region Characteristics

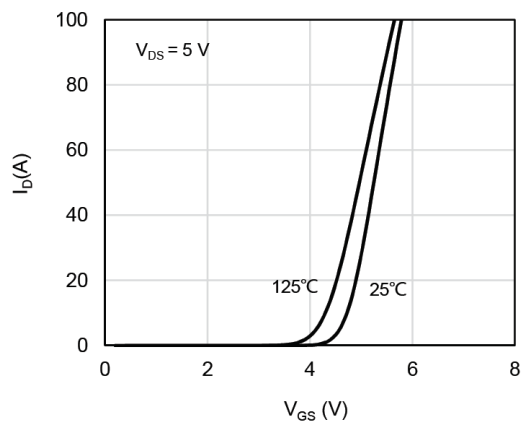


Figure 2: Transfer Characteristics

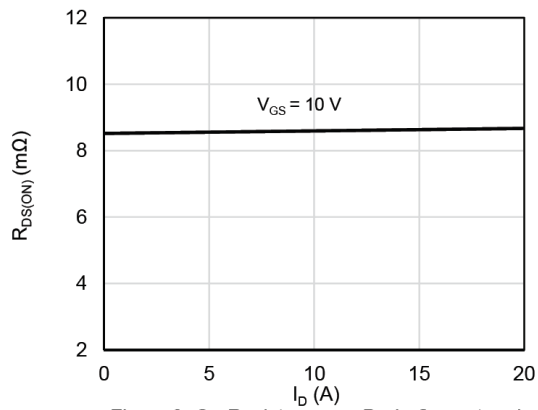


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

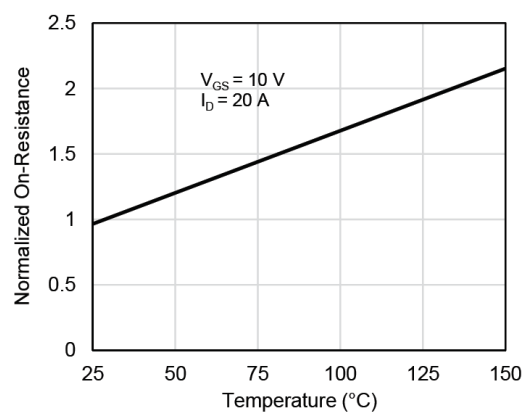


Figure 4: On-Resistance vs. Junction Temperature

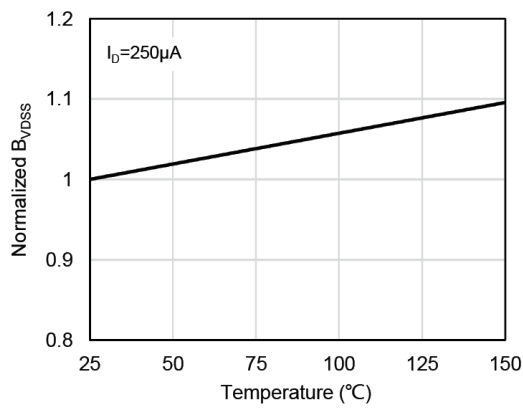


Figure 5: Breakdown Voltage vs. Junction Temperature

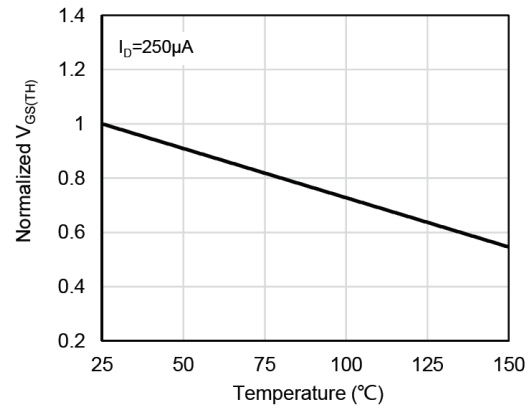


Figure 6: Threshold Voltage vs. Junction Temperature

Electrical Characteristic Curve

BCB4115F

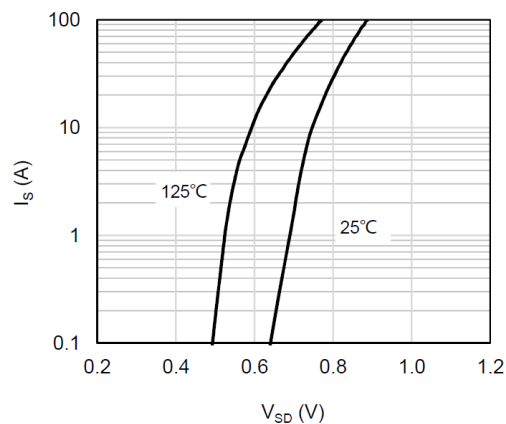


Figure 7: Body-Diode Characteristics

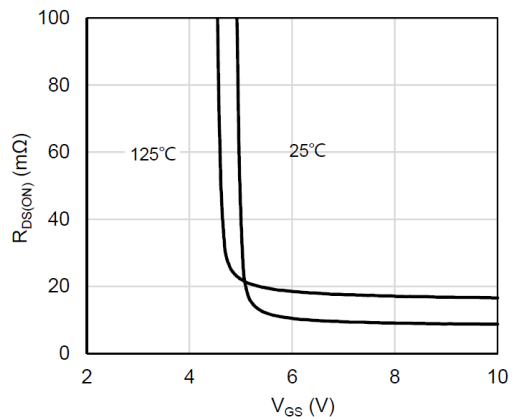


Figure 8: On-Resistance vs. Gate-Source Voltage

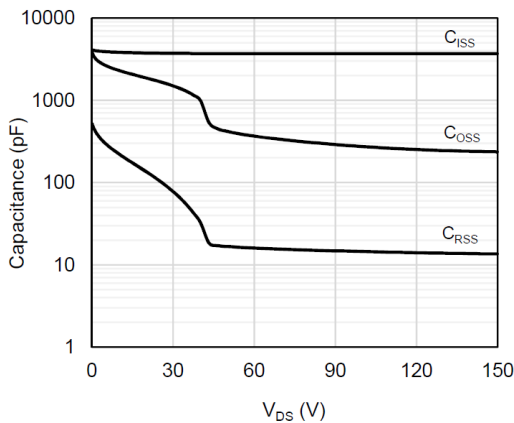


Figure 9: Capacitance Characteristics

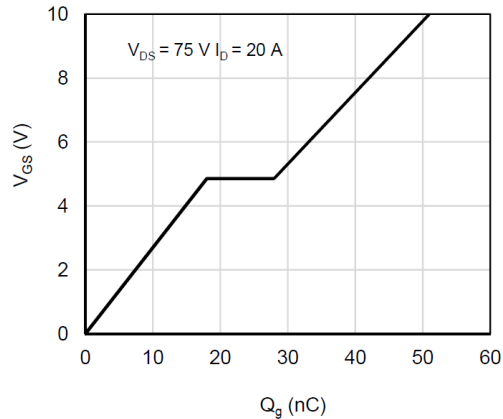


Figure 10: Gate-Charge Characteristics

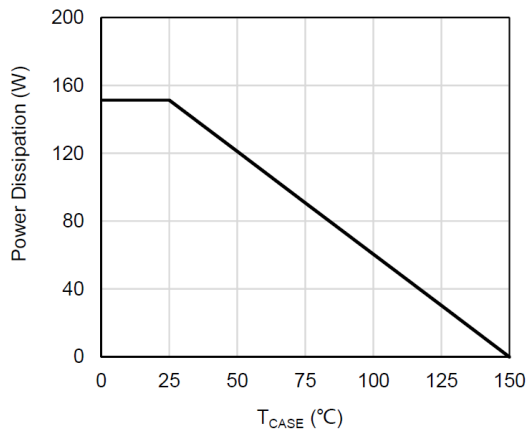


Figure 11: Power De-rating

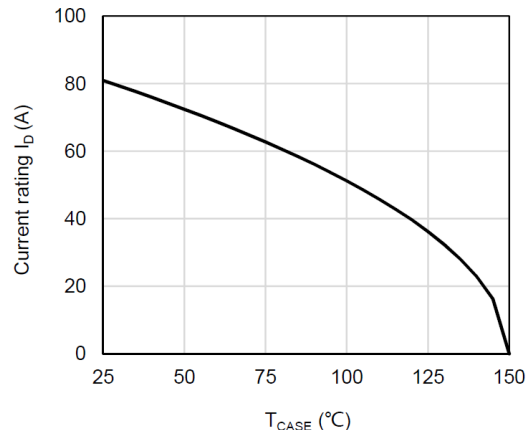


Figure 12: Current De-rating

Electrical Characteristic Curve
BCB4115F

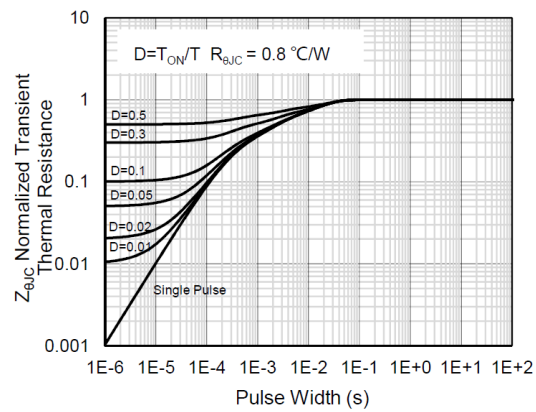


Figure 13: Normalized Maximum Transient Thermal Impedance

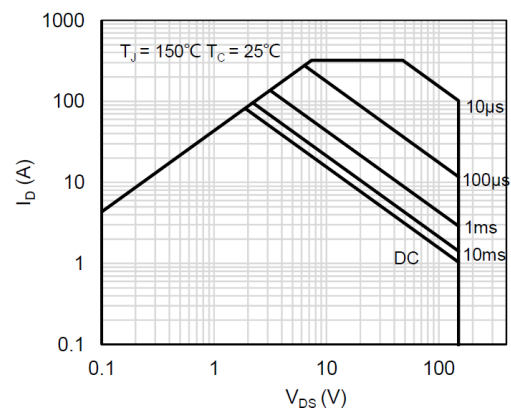


Figure 14: Maximum Forward Biased Safe Operating Area

Package Dimensions

T□-220

单位：mm

