DC3415C

P-Channel Enhancement Mode Field Effect Transistor

PRIMARY CHARACTERISTICS		
BV_{DSS}	$R_{DS(ON)}$MAX	I_D
-20V	95mΩ@VGS=-4.5V	-3.0A
	130mΩ@VGS=-2.5V	

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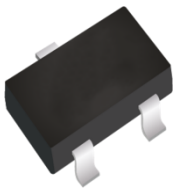

Features

- Trench Power LV MOSFET technology
- High Power and Current handling capability
- Low Gate Charge

Mechanical Data

- Package: SOT-23
- Marking: 3415.
- Packing: Tape & Reel, 3000 units/reel

Applications

- PWM Applications
- Power Management
- Load Switch

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
DC3415C	SOT-23	3415.	7" Tape&Reel	3,000

Maximum Ratings (@ T_A = 25°C, unless otherwise specified.)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	-20	V
Gate - Source Voltage		V_{GS}	±10	V
Continuous Drain Current (V_{GS} = 4.5V) (1)	T_A = 25°C	I_D	-3.0	A
Pulsed Drain Current (2)		I_{DM}	-14	A
Power Dissipation	T_A = 25°C	P_D	1	W
Junction & Storage Temperature Range		T_J, T_{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient (3)	$R_{\theta JA}$	125	125	°C/W

Electrical Characteristics (@ T_J = 25°C, unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics (4)						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	VGS = 0V, ID = -250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	VDS = -20V, VGS = 0V,TJ=25℃	-	-	-1	μA
Gate-Source Leakage Current	I_{GSS}	VGS = ±10V, VDS = 0V	-	-	±100	nA
On Characteristics (4)						
Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS, ID = -250μA	-0.5	-0.64	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	VGS = -2.5V, ID = -2A	-	77	130	mΩ
		VGS = -4.5V, ID = -3.0A	-	60	95	mΩ
Diodes Forward Voltage	V_{SD}	IS = -3.0A, VGS = 0V	-	-0.8	-1.2	V
Dynamic Characteristics (4)						
Input Capacitance	C_{iss}	VDS = -10V, VGS = 0V, f = 1MHz	-	550	-	pF
Output Capacitance	C_{oss}		-	89	-	pF
Reverse Transfer Capacitance	C_{rss}		-	65	-	pF
Switching Characteristics (5)						
Turn-On DelayTime	$t_{d(on)}$	VGS = -4.5V, VDD = -10V, ID = -1A, RG = 2.5Ω	-	12	-	ns
Rise Time	t_r		-	54	-	ns
Turn-Off DelayTime	$t_{d(off)}$		-	15	-	ns
Fall Time	t_f		-	9	-	ns
Gate Charge Characteristics (5)						
Total Gate Charge	Q_g	VDS = -10V, ID = -3.0A VGS = -4.5V	-	4.3	-	nC
Gate-Source Charge	Q_{gs}		-	0.8	-	nC
Gate-Drain Charge	Q_{gd}		-	1.1	-	nC
Drain-Source Diode Characteristics(5)						
Diode Forward Current	I_S	TA = 25°C	-	-	-3.0	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	TA = 25°C	-	-	-	A
Drain to Source Diode Forward Voltage	V_{SD}	VGS = 0V	-	-0.8	-1.2	V

Notes:

1. This current is chip limited, which is calculated based on Rthja.
2. This current is calculated on single pulse with 10μs Single Pulse .
3. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
4. Short duration pulse test used to minimize self-heating effect.
5. Defined by design, not subject to production.

Typical Performance Characteristics

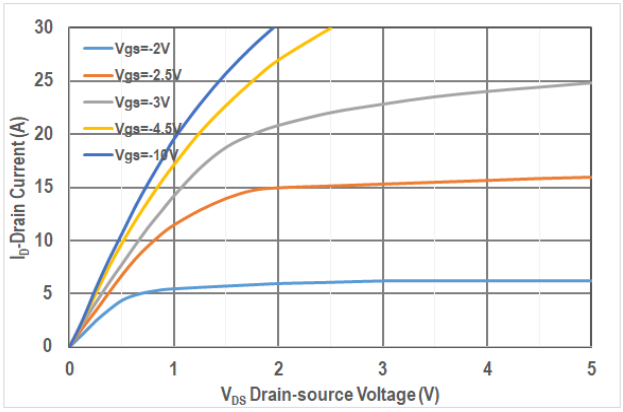

Figure1. Output Characteristics

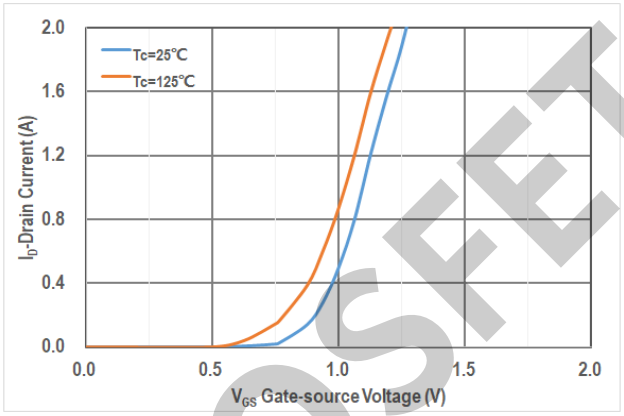

Figure2. Transfer Characteristics

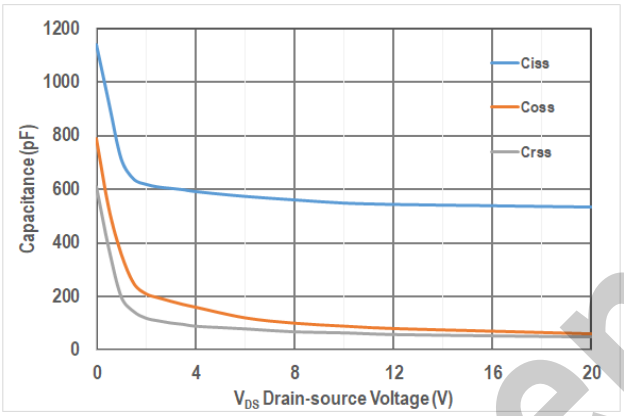

Figure3. Capacitance Characteristics

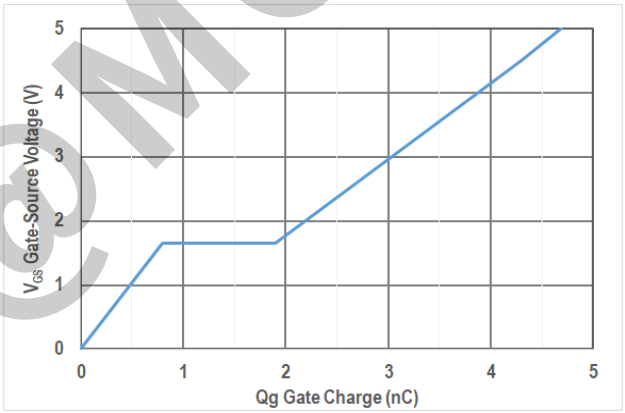

Figure4. Gate Charge

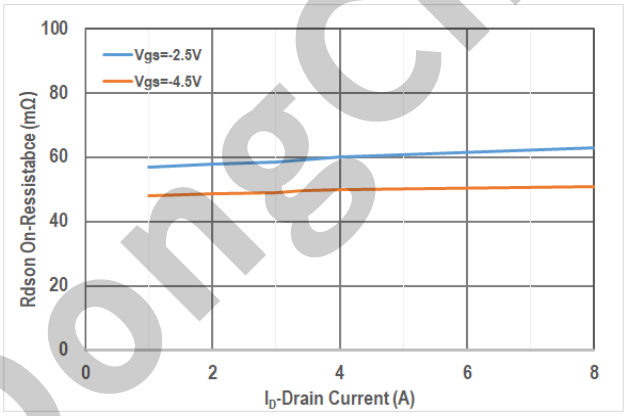

Figure5. Drain-Source on Resistance

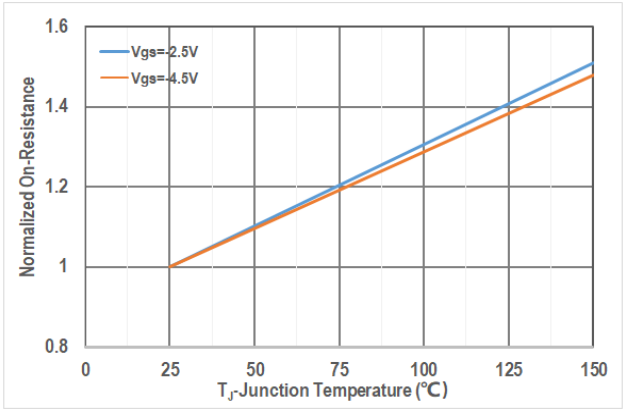

Figure6. Drain-Source on Resistance

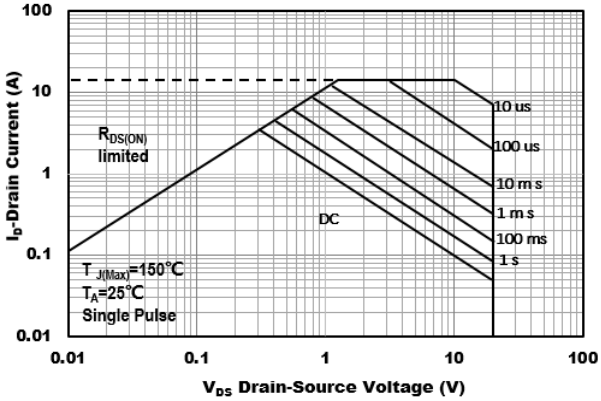

Figure7. Safe Operation Area

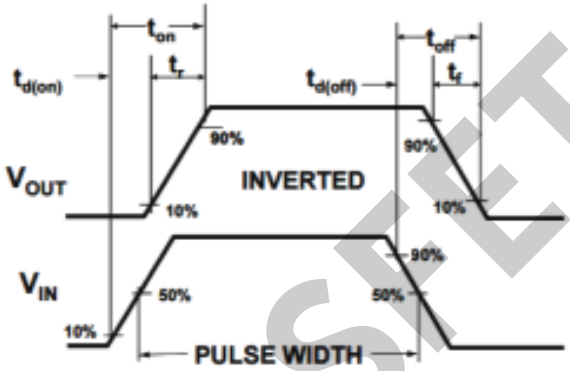

Figure8. Switching wave

Outline Drawing

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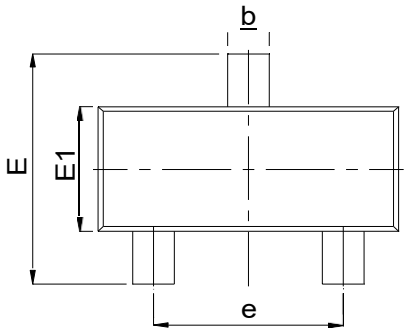
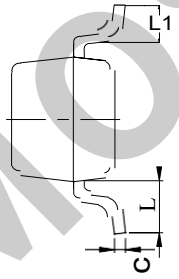
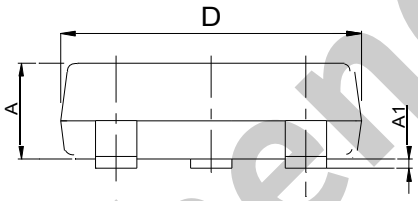


Top View



Side View



Front View

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.10
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
L	0.45	0.55	0.65
L1	0.20	-	0.55
b	0.30	0.40	0.50
c	-	0.10	0.15
e	-	1.90	-

Dimensions in inches and (millimeters)

Suggested Soldering Pad Layout

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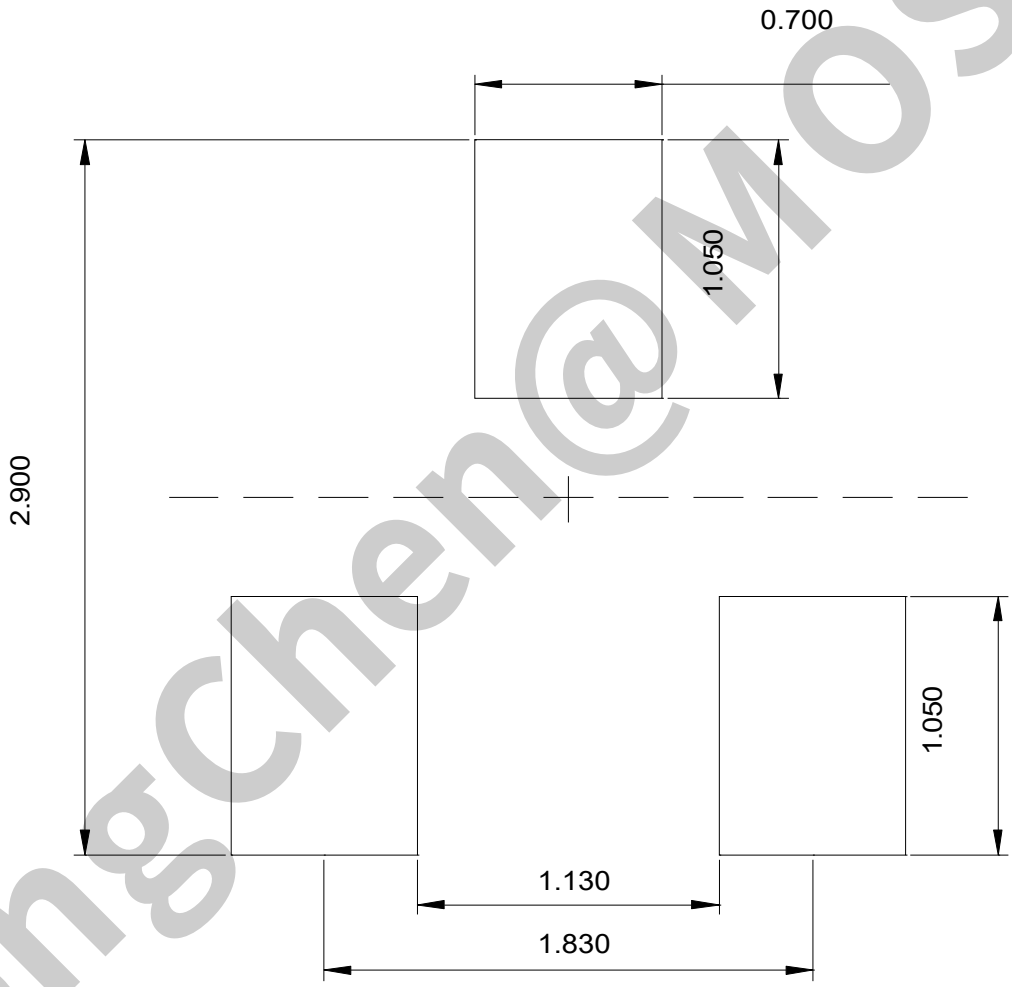

Dimensions in inches and (millimeters)

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