

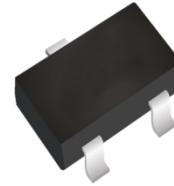
PRIMARY CHARACTERISTICS

BV_{DSS}	$R_{DS(ON)MAX}$	I_D
-20V	28m Ω @VGS=-4.5V	-4.1A
	40m Ω @VGS=-2.5V	

Features

- Excellent RDS(ON) and Low Gate Charge
- P-Channel, VDS = -20V, ID = -4.1A
- 100% UIS Tested
- 100% ΔV_{ds} Tested
- ESD Rating: HBM 2.0kV
- RoHS Compliant, Halogen Free
- Lead-free product

SOT-23



Mechanical Data

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

Applications

- PWM Applications
- Load Switch
- Power Management

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
DCM3415EH	SOT-23	3415 EH	7" Tape&Reel	3,000

Maximum Ratings (@ $T_A = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	-20V	V
Gate - Source Voltage	V_{GS}	$\pm 10\text{V}$	V
Continuous Drain Current ($V_{GS} = 4.5\text{V}$) ⁽¹⁾	I_D	$T_A = 25^\circ\text{C}$ -4.1	A
		$T_A = 70^\circ\text{C}$ -2.7	A
Pulsed Drain Current ⁽²⁾	I_{DM}	-16.4	A
Power Dissipation	P_D	1.1	W
Junction & Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ⁽³⁾	$R_{\theta JA}$	-	114	$^\circ\text{C/W}$

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$, 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°C	-	-	1	μA
Gate-Source Leakage Current	I _{GSS}	VGS = ±10V, VDS = 0V	-	-	±10	nA
On Characteristics ⁽⁴⁾						
Gate Threshold Voltage	V _{GS(th)}	-, VDS = VGS, ID = -250μA	-0.45	-0.65	-0.9	V
Static Drain-Source On-Resistance	R _{DS(ON)}	VGS = -2.5V, ID = -1A	-	40	52	mΩ
		VGS = -4.5V, ID = -1A	-	28	38	mΩ
Diodes Forward Voltage	V _{SD}	IS = -4.1A, VGS = 0V	-	-	-1.2	V
Dynamic Characteristics ⁽⁴⁾						
Input Capacitance	C _{ISS}	VDS = -10V, VGS = 0V, f = 1MHz	-	235	-	pF
Output Capacitance	C _{OSS}		-	92	-	pF
Reverse Transfer Capacitance	C _{RSS}		-	22	-	pF
Switching Characteristics ⁽⁵⁾						
Turn-On DelayTime	t _{d(on)}	VGS = -4.5V, VDD = -10V, ID = -4.1A, RG = 1Ω	-	12	-	ns
Rise Time	t _r		-	35	-	ns
Turn-Off DelayTime	t _{d(off)}		-	30	-	ns
Fall Time	t _f		-	10	-	ns
Gate Charge Characteristics ⁽⁵⁾						
Total Gate Charge	Q _g	VDS = -10V, ID = -4.1A VGS = -4.5V	-	9	-	nC
Gate-Source Charge	Q _{gs}		-	1	-	nC
Gate-Drain Charge	Q _{gd}		-	2.6	-	nC
Drain-Source Diode Characteristics ⁽⁵⁾						
Diode Forward Current	IS	TA = 25°C	-	-	-4.1	A
Maximum Pulsed Drain to Source Diode Forward Current	ISM	TA = 25°C	-	-	-16.4	A
Drain to Source Diode Forward Voltage	VSD	VGS = 0V	-	-	-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

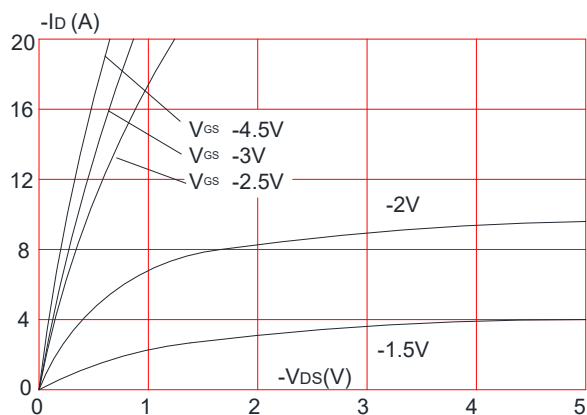


Figure 2: Typical Transfer Characteristics

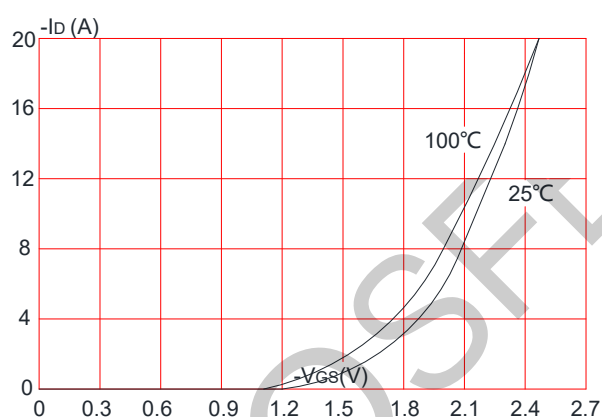


Figure 3: On-resistance vs. Drain Current

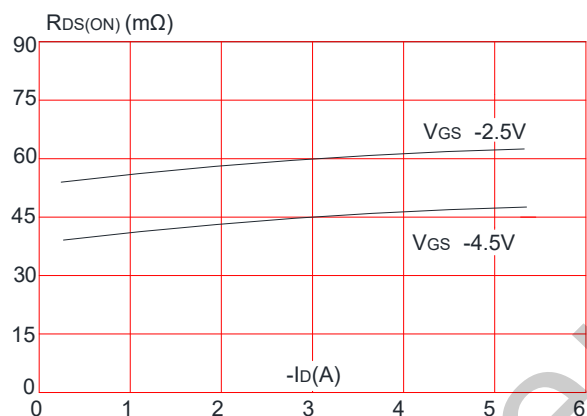


Figure 4: Body Diode Characteristics

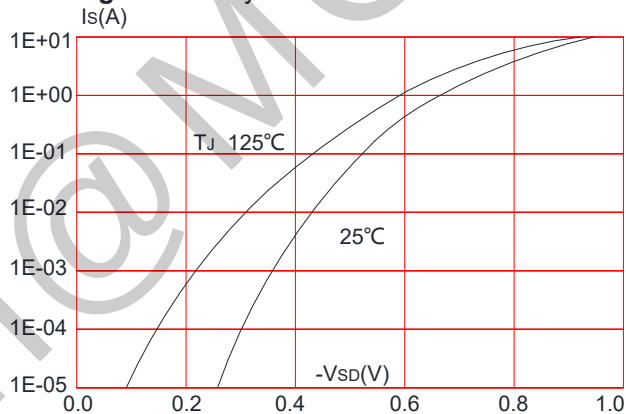


Figure 5: Gate Charge Characteristics

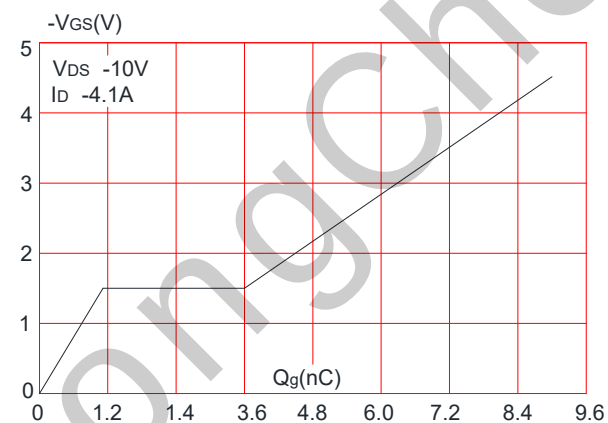


Figure 6: Capacitance Characteristics

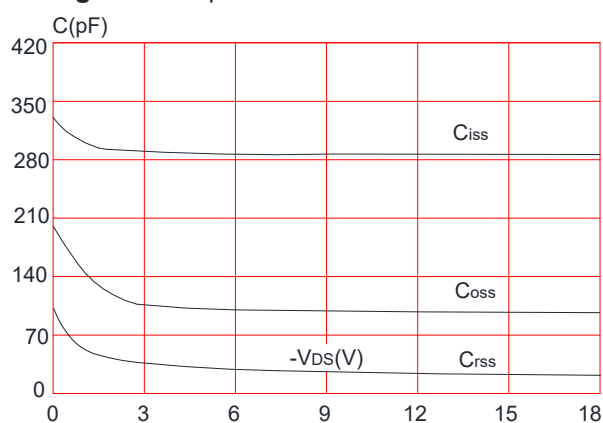


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

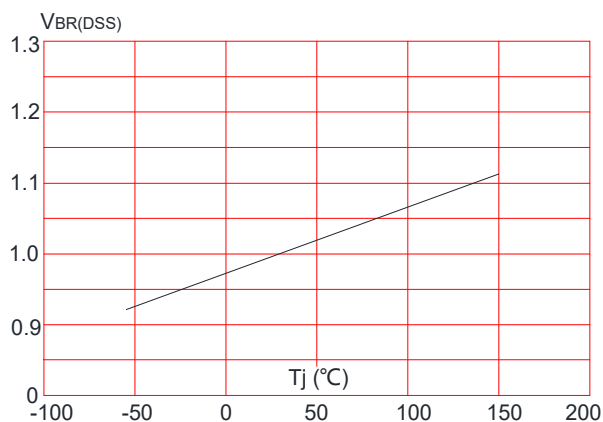


Figure 8: Normalized on Resistance vs. Junction Temperature

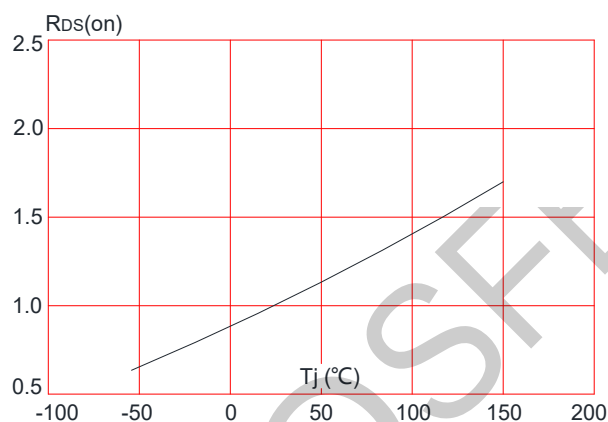


Figure 9: Maximum Safe Operating Area

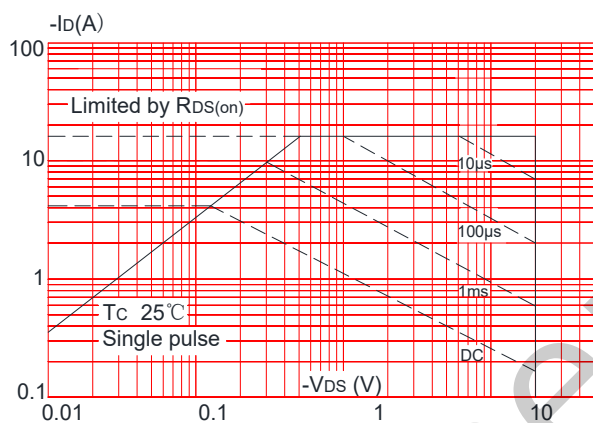


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

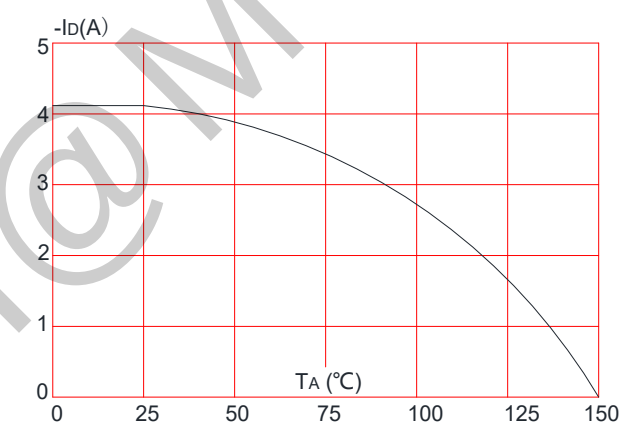
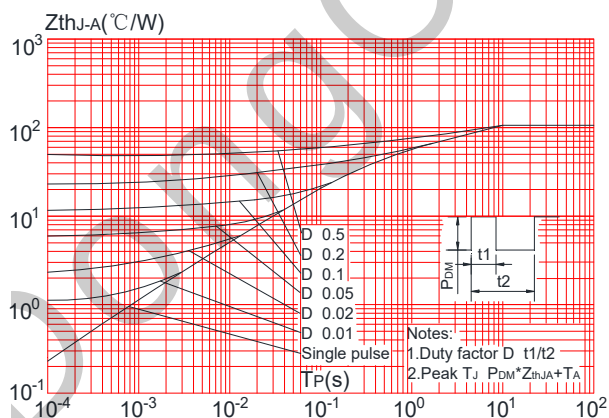
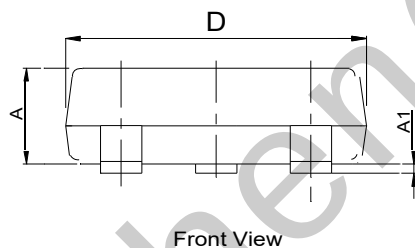
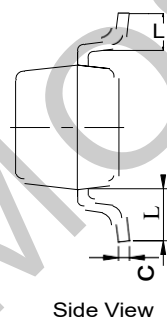
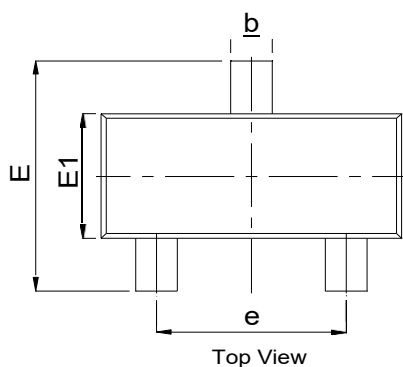


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Outline Drawing

SOT-23

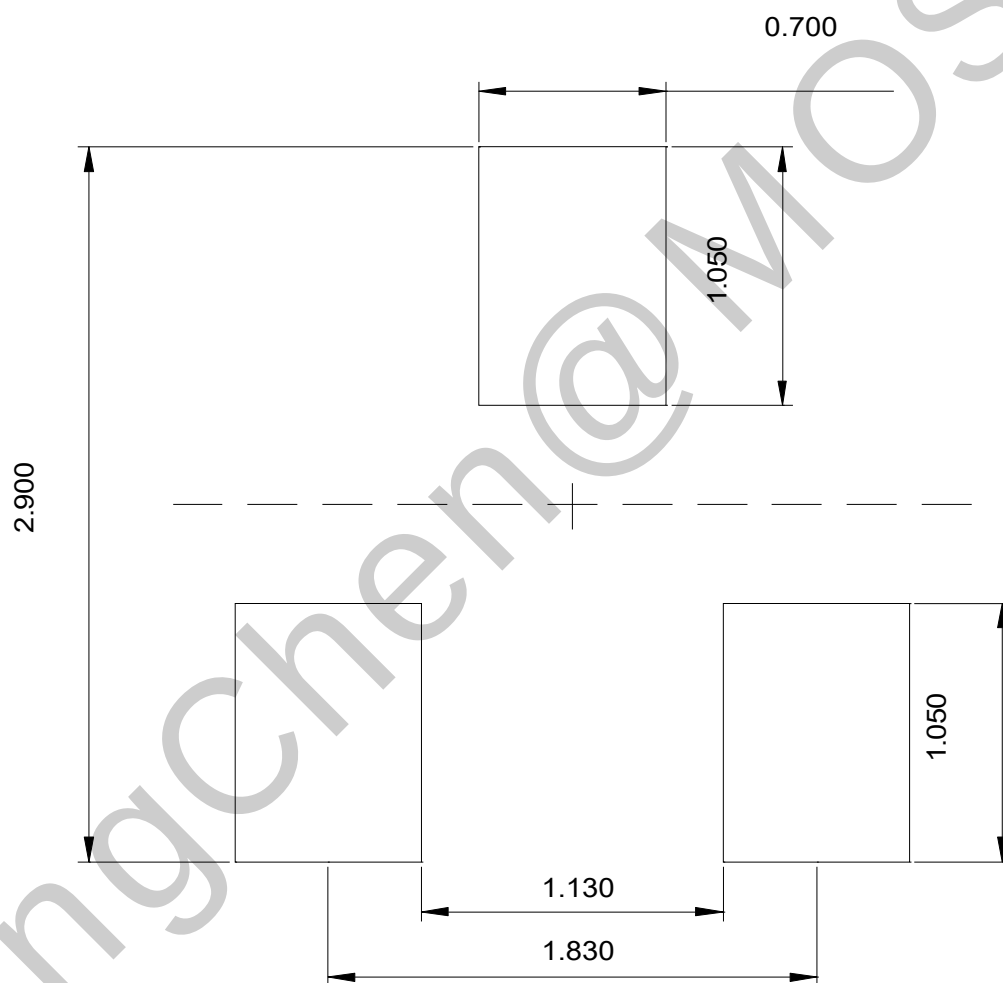


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.10
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
L	0.45	0.55	0.65
L1	0.20	-	0.55
b	0.30	0.40	0.50
c	-	0.10	0.15
e	-	1.90	-

Dimensions in inches and (millimeters)

Suggested Soldering Pad Layout

SOT-23



Dimensions in inches and (millimeters)

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