



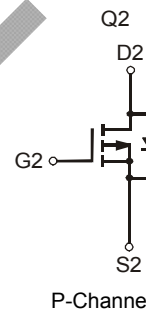
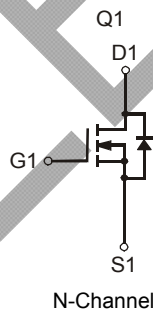
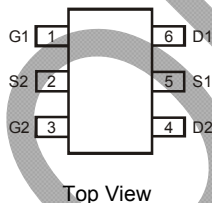
Product Summary

Device	$V_{(BR)DSS}$	$R_{DS(on)}$	I_D $T_A = 25^\circ C$
Q1	20V	35m Ω @ $V_{GS} = 4.5V$	4.5A
		43m Ω @ $V_{GS} = 2.5V$	4.0A
Q2	-20V	74m Ω @ $V_{GS} = -4.5V$	-3.2A
		110m Ω @ $V_{GS} = -2.5V$	-2.6A

Description and Applications

This new generation MOSFET has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Backlighting
- DC-DC Converters
- Power management functions



Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

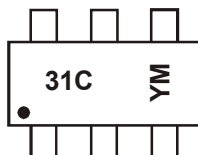
- Case: TSOT23-6
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Weight: 0.008 grams (approximate)

Ordering Information (Note 3)

Part Number	Case	Packaging
DMC3038LVT-7	TSOT23-6	3000 / Tape & Reel

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



31C = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: X = 2010)
 M = Month (ex: 9 = September)

Date Code Key

Year Code	2010	2011	2012	2013	2014	2015	2016
Code	X	Y	Z	A	B	C	D

Month Code	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings – Q1 @TA = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V_{GSS}	±12	V
Continuous Drain Current (Note 4) $V_{GS} = 4.5V$	Steady State	$T_A = 25^\circ C$	I_D	4.6	A
		$T_A = 70^\circ C$		3.6	
Continuous Drain Current (Note 4) $V_{GS} = 2.5V$	Steady State	$T_A = 25^\circ C$	I_D	4.0	A
		$T_A = 70^\circ C$		3.2	
Pulsed Drain Current (Note 5)			I_{DM}	17.0	A

Maximum Ratings – Q2 @TA = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-20	V
Gate-Source Voltage			V_{GSS}	±12	V
Continuous Drain Current (Note 4) $V_{GS} = -4.5V$	Steady State	$T_A = 25^\circ C$	I_D	-3.2	A
		$T_A = 70^\circ C$		-2.6	
Continuous Drain Current (Note 4) $V_{GS} = -2.5V$	Steady State	$T_A = 25^\circ C$	I_D	-2.6	A
		$T_A = 70^\circ C$		-2.1	
Pulsed Drain Current (Note 5)			I_D	-12.0	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	1.12	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ C$ (Note 4)	$R_{\theta JA}$	111	$^\circ C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

Electrical Characteristics – Q1 @ TA = 25°C unless otherwise stated

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1.0	μA	$V_{DS} = 16V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	0.4	-	1.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	27	35	m Ω	$V_{GS} = 4.5V, I_D = 4.0A$
		-	33	43		$V_{GS} = 2.5V, I_D = 2.5A$
		-	43	56		$V_{GS} = 1.8V, I_D = 1.5A$
Forward Transfer Admittance	$ Y_{fs} $	-	9	-	S	$V_{DS} = 5V, I_D = 3.4A$
Diode Forward Voltage	V_{SD}	0.4	-	1.1	V	$V_{GS} = 0V, I_S = 1A$
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	-	TBD	-	pF	$V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz$
Output Capacitance	C_{oss}	-	TBD	-		
Reverse Transfer Capacitance	C_{rss}	-	TBD	-		
Gate Resistance	R_g	-	TBD	-	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge ($V_{GS} = 10V$)	Q_g	-	TBD	-	nC	$V_{DS} = 10V, V_{GS} = 10V, I_D = 4.0A$
Total Gate Charge ($V_{GS} = 4.5V$)	Q_g	-	TBD	-		
Gate-Source Charge	Q_{gs}	-	TBD	-		
Gate-Drain Charge	Q_{gd}	-	TBD	-		
Turn-On Delay Time	$t_{D(on)}$	-	TBD	-	ns	$V_{GS} = 4.5V, V_{DS} = 10V, R_G = 6\Omega, R_L = 10\Omega$
Turn-On Rise Time	t_r	-	TBD	-		
Turn-Off Delay Time	$t_{D(off)}$	-	TBD	-		
Turn-Off Fall Time	t_f	-	TBD	-		
Body Diode Reverse Recovery Time	t_{rr}	-	TBD	-	ns	$I_F = 4.0A, dI/dt = 100A/\mu s$
Body Diode Reverse Recovery Charge	Q_{rr}	-	TBD	-	ns	$I_F = 4.0A, dI/dt = 100A/\mu s$

- Notes:
- Device mounted on FR-4 with minimum recommended pad layout, single sided.
 - Repetitive rating, pulse width limited by junction temperature.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to production testing.

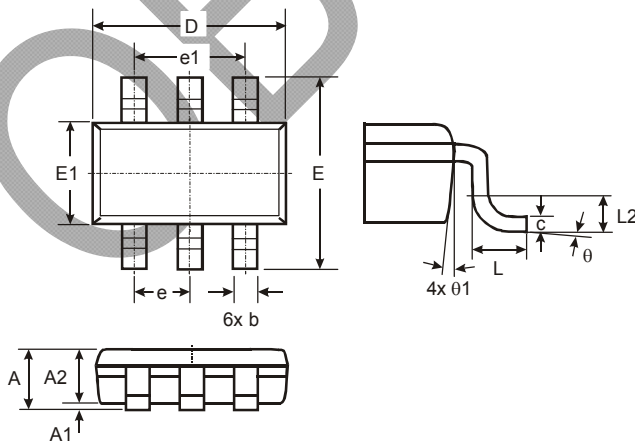
OBSOLETE - PART DISCONTINUED

Electrical Characteristics – Q2 @ T_A = 25°C unless otherwise stated

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	-20	-	-	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	-	-	-1.0	μA	V _{DS} = -16V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	-	-	±100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	-0.4	-	-1.0	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	-	57	74	mΩ	V _{GS} = -4.5V, I _D = -3.0A
		-	76	110		V _{GS} = -2.5V, I _D = -1.5A
		-	102	168		V _{GS} = -1.8V, I _D = -1.0A
Forward Transfer Admittance	Y _{fs}	-	10	-	S	V _{DS} = -5V, I _D = -3.0A
Diode Forward Voltage	V _{SD}	-	-0.8	-1.0	V	V _{GS} = 0V, I _S = -0.6A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	-	TBD	-	pF	V _{DS} = -10V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	-	TBD	-		
Reverse Transfer Capacitance	C _{rss}	-	TBD	-		
Gate Resistance	R _g	-	TBD	-	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (V _{GS} = 10V)	Q _g	-	TBD	-	nC	V _{DS} = -10V, V _{GS} = -10V, I _D = -2.5A
Total Gate Charge (V _{GS} = 4.5V)	Q _g	-	TBD	-		
Gate-Source Charge	Q _{gs}	-	TBD	-		
Gate-Drain Charge	Q _{gd}	-	TBD	-		
Turn-On Delay Time	t _{D(on)}	-	TBD	-	ns	V _{GS} = -4.5V, V _{DS} = -10V, R _G = 6Ω, R _L = 10Ω
Turn-On Rise Time	t _r	-	TBD	-		
Turn-Off Delay Time	t _{D(off)}	-	TBD	-		
Turn-Off Fall Time	t _f	-	TBD	-		
Body Diode Reverse Recovery Time	t _{rr}	-	TBD	-	ns	I _F = -3.0A, dI/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q _{rr}	-	TBD	-	ns	I _F = -3.0A, dI/dt = 100A/μs

Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.

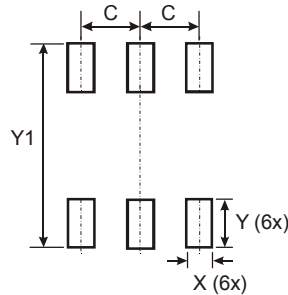
Package Outline Dimensions



TSOT23-6			
Dim	Min	Max	Typ
A	-	1.00	-
A1	0.01	0.10	-
A2	0.84	0.90	-
D	-	-	2.90
E	-	-	2.80
E1	-	-	1.60
b	0.30	0.45	-
c	0.12	0.20	-
e	-	-	0.95
e1	-	-	1.90
L	0.30	0.50	-
L2	-	-	0.25
θ	0°	8°	4°
θ1	4°	12°	-
All Dimensions in mm			

OBSOLETE - PART DISCONTINUED

Suggested Pad Layout



Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199

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