

Product Summary

Device	$V_{(BR)DSS}$	$R_{DS(ON)}$ max	I_D max $T_A = +25^\circ C$
Q1	30	0.4Ω @ $V_{GS} = 10V$	0.65A
		0.7Ω @ $V_{GS} = 4.5V$	0.52A
Q2	-30	0.9Ω @ $V_{GS} = -10V$	-0.45A
		1.7Ω @ $V_{GS} = -4.5V$	-0.33A

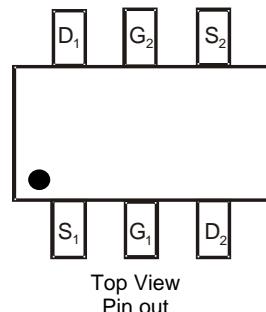
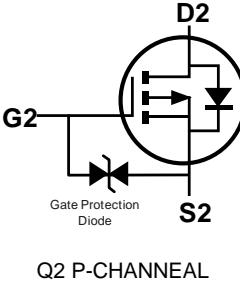
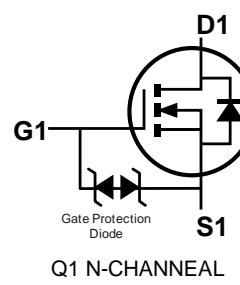
Description and Applications

This MOSFET is 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.

- Motor Control
- Power Management Functions
- DC-DC Converters



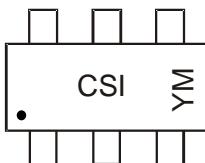
Top View

**Ordering Information** (Note 4)

Part Number	Case	Packaging
DMC3400SDW-7	SOT363	3000/Tape & Reel
DMC3400SDW-13	SOT363	10000/Tape & Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information

CSI = Product Type Marking Code

YM = Date Code Marking

Y or \bar{Y} = Year (ex: B = 2014)

M = Month (ex: 9 = September)

Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020					
Code	B	C	D	E	F	G	H					
Month	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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic			Symbol	Value_Q1	Value_Q2	Units
Drain-Source Voltage			V_{DSS}	30	-30	V
Gate-Source Voltage			V_{GSS}	± 20	± 20	V
Continuous Drain Current (Note 6) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$	I_D	0.65	-0.45	A
		$T_A = +70^\circ\text{C}$		0.50	-0.36	
Maximum Continuous Body Diode Forward Current (Note 6)			I_S	0.4	-0.35	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)			I_{DM}	4	-3	A

 Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)		P_D	0.31	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	406	$^\circ\text{C}/\text{W}$
Total Power Dissipation (Note 6)		P_D	0.39	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	319	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case		$R_{\theta JC}$	126	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

 Electrical Characteristics – N Channel – Q1 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS} = 24\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	-	-	± 10	μA	$V_{GS} = \pm 16\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.8	-	1.6	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	0.2	0.4	Ω	$V_{GS} = 10\text{V}, I_D = 0.59\text{A}$
		-	0.3	0.7		$V_{GS} = 4.5\text{V}, I_D = 0.2\text{A}$
Diode Forward Voltage	V_{SD}	-	0.8	1.2	V	$V_{GS} = 0\text{V}, I_S = 0.23\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	55	-	pF	$V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	8.5	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	6.5	-	pF	
Gate Resistance	R_g	-	92	-	Ω	$V_{DS} = V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	-	0.6	-	nC	$V_{DS} = 10\text{V}, I_D = 250\text{mA}$
Total Gate Charge ($V_{GS} = 10\text{V}$)	Q_g	-	1.4	-	nC	
Gate-Source Charge	Q_{gs}	-	0.2	-	nC	
Gate-Drain Charge	Q_{qd}	-	0.1	-	nC	
Turn-On Delay Time	$t_{D(ON)}$	-	3.8	-	ns	$V_{GS} = 10\text{V}, V_{DS} = 30\text{V}, I_D = 100\text{mA}, R_G = 1\Omega$
Turn-On Rise Time	t_R	-	3.5	-	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	-	25.2	-	ns	
Turn-Off Fall Time	t_F	-	18.8	-	ns	

Electrical Characteristics – P Channel – Q2 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$\text{V}_{\text{DS}} = -24\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	-	-	± 10	μA	$\text{V}_{\text{GS}} = \pm 16\text{V}$, $\text{V}_{\text{DS}} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$\text{V}_{\text{GS(TH)}}$	-1	-	-2.6	V	$\text{V}_{\text{DS}} = \text{V}_{\text{GS}}$, $\text{I}_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$\text{R}_{\text{DS(ON)}}$	-	0.36	0.9	Ω	$\text{V}_{\text{GS}} = -10\text{V}$, $\text{I}_D = -0.42\text{A}$
		-	0.57	1.7		$\text{V}_{\text{GS}} = -4.5\text{V}$, $\text{I}_D = -0.2\text{A}$
Diode Forward Voltage	V_{SD}	-	-0.8	-1.2	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_S = -0.23\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	54	-	pF	$\text{V}_{\text{DS}} = -15\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$, $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	10	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	8.3	-	pF	
Gate Resistance	R_g	-	240	-	Ω	
Total Gate Charge ($\text{V}_{\text{GS}} = -4.5\text{V}$)	Q_g	-	0.6	-	nC	$\text{V}_{\text{DS}} = \text{V}_{\text{GS}} = 0\text{V}$, $f = 1.0\text{MHz}$
Total Gate Charge ($\text{V}_{\text{GS}} = -10\text{V}$)	Q_g	-	1.3	-	nC	
Gate-Source Charge	Q_{gs}	-	0.2	-	nC	
Gate-Drain Charge	Q_{gd}	-	0.2	-	nC	
Turn-On Delay Time	$\text{t}_{\text{D(ON)}}$	-	5.7	-	ns	$\text{V}_{\text{GS}} = -10\text{V}$, $\text{V}_{\text{DD}} = -15\text{V}$, $\text{I}_D = -0.5\text{A}$, $\text{R}_g = 1\Omega$
Turn-On Rise Time	t_R	-	8.8	-	ns	
Turn-Off Delay Time	$\text{t}_{\text{D(OFF)}}$	-	35	-	ns	
Turn-Off Fall Time	t_F	-	19	-	ns	

Notes:

5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

Typical Characteristics - N-CHANNEL

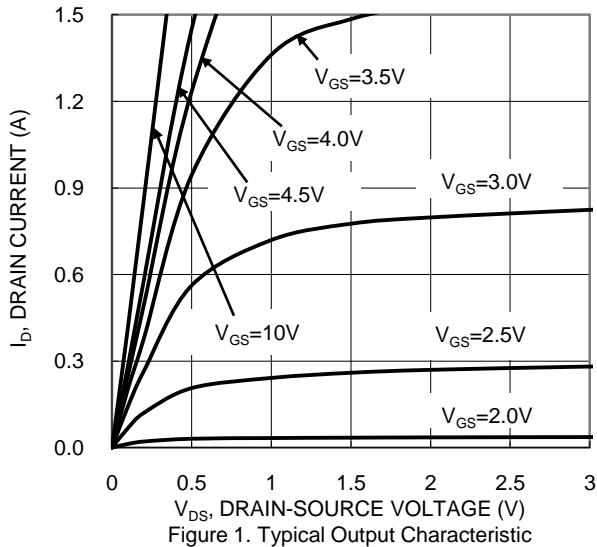


Figure 1. Typical Output Characteristic

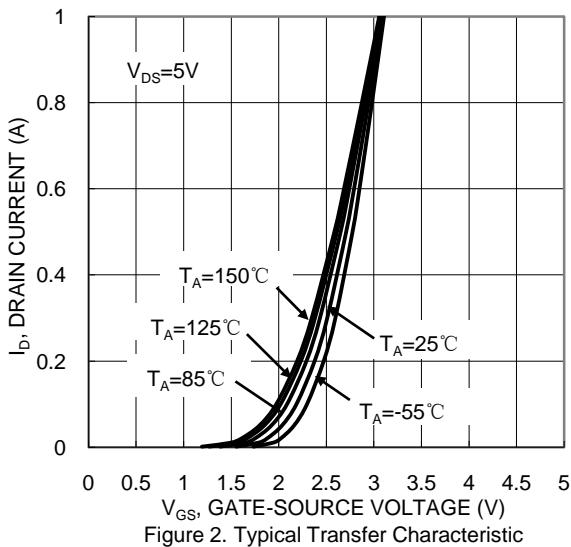


Figure 2. Typical Transfer Characteristic

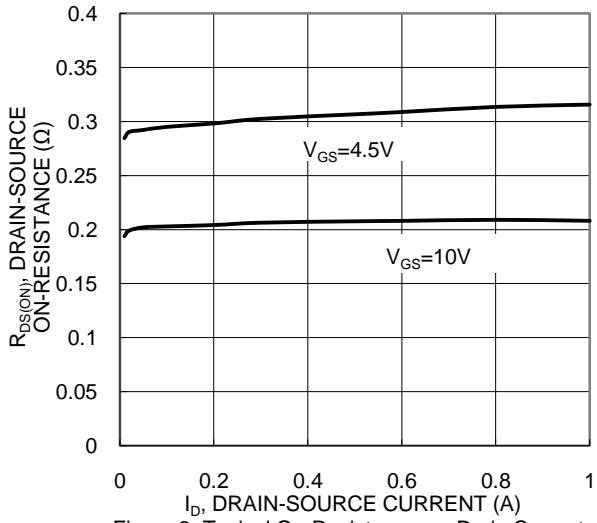


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

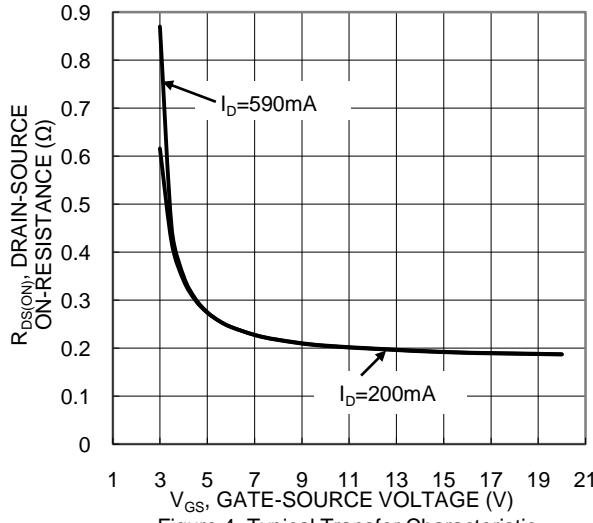


Figure 4. Typical Transfer Characteristic

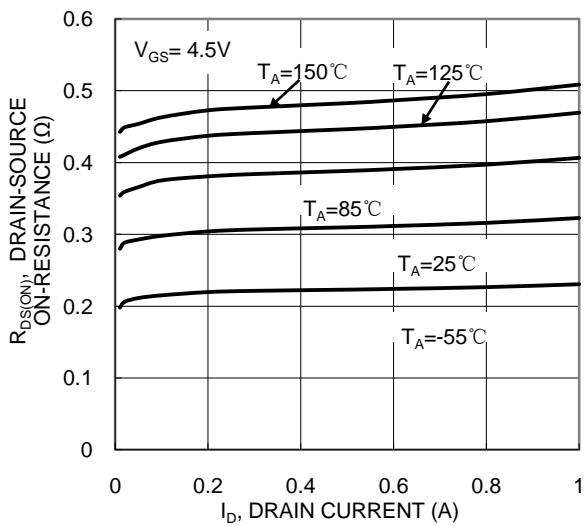


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

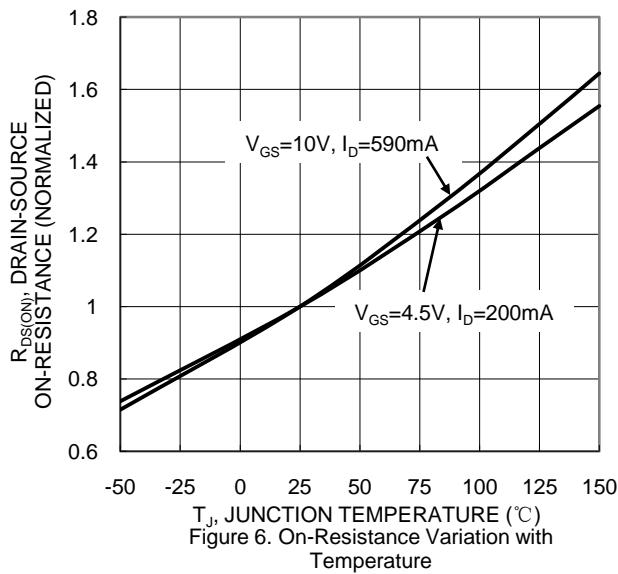
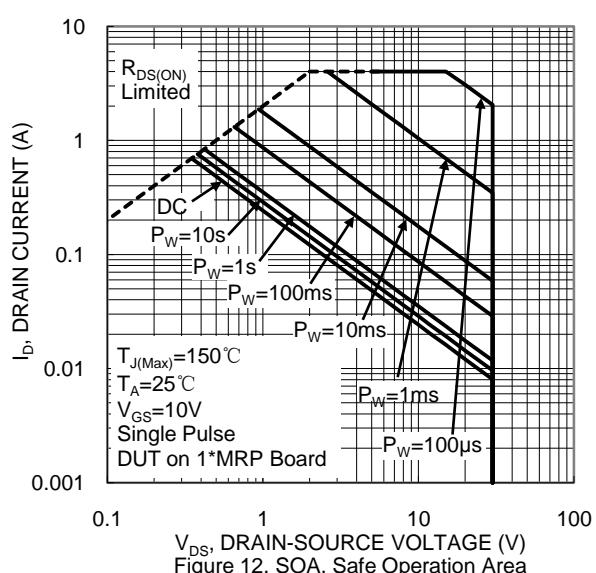
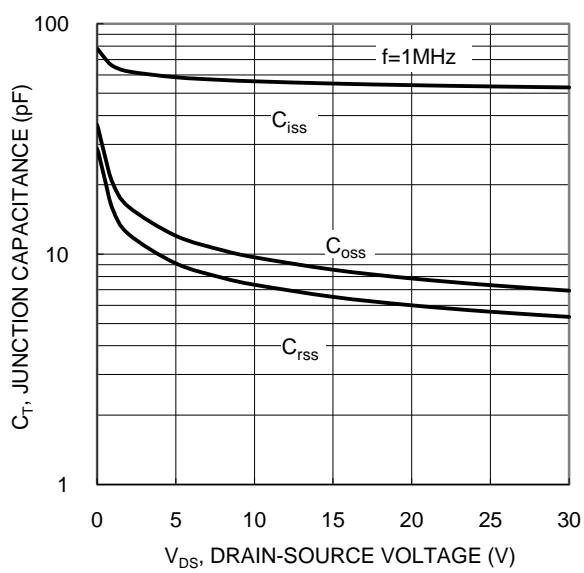
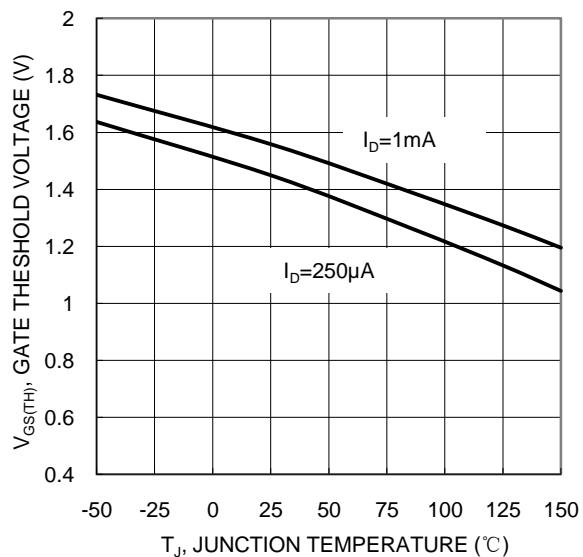
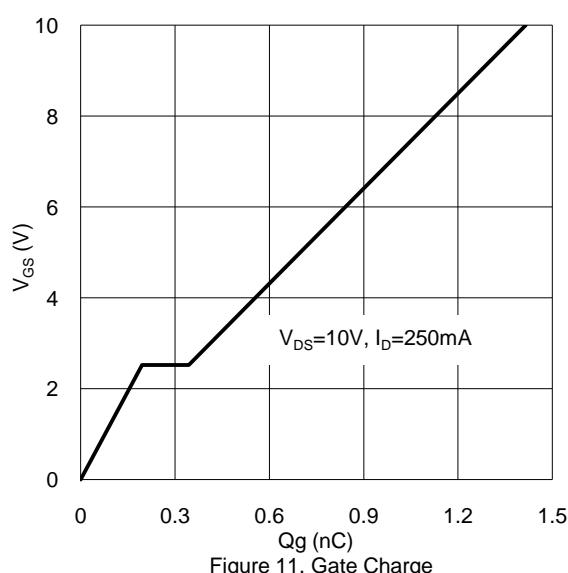
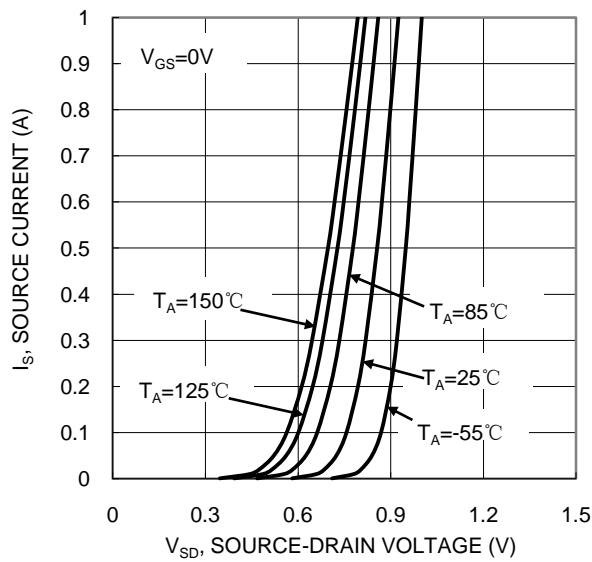
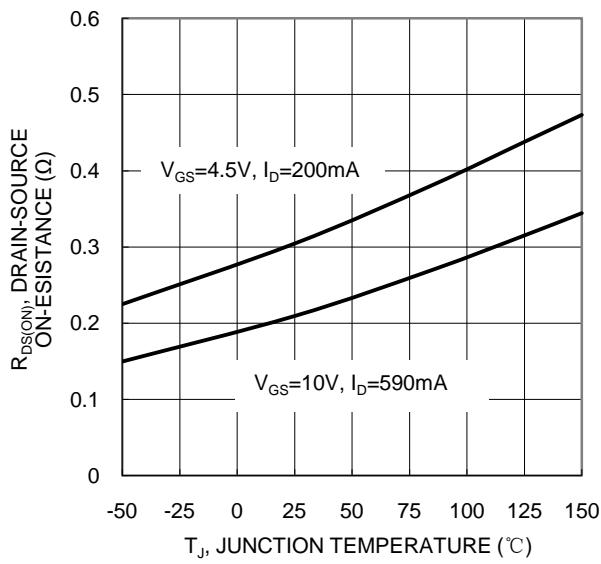


Figure 6. On-Resistance Variation with Temperature



Typical Characteristics - P-CHANNEL

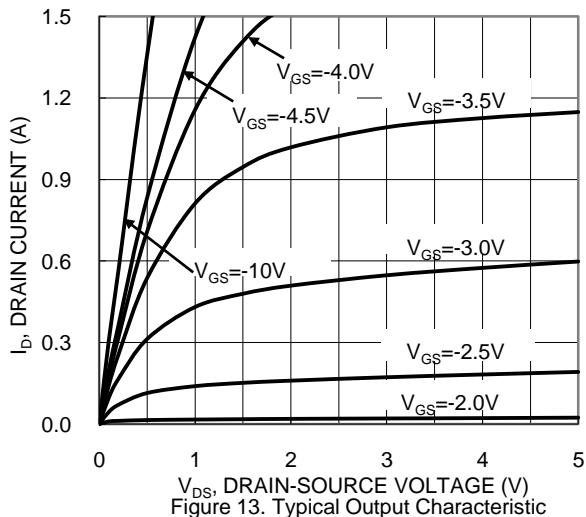


Figure 13. Typical Output Characteristic

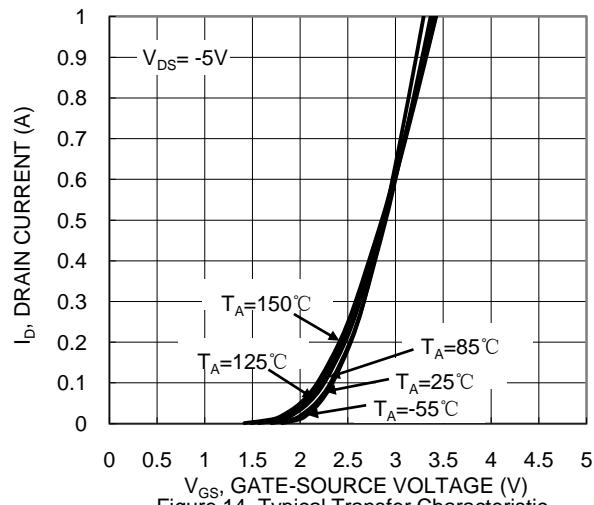


Figure 14. Typical Transfer Characteristic

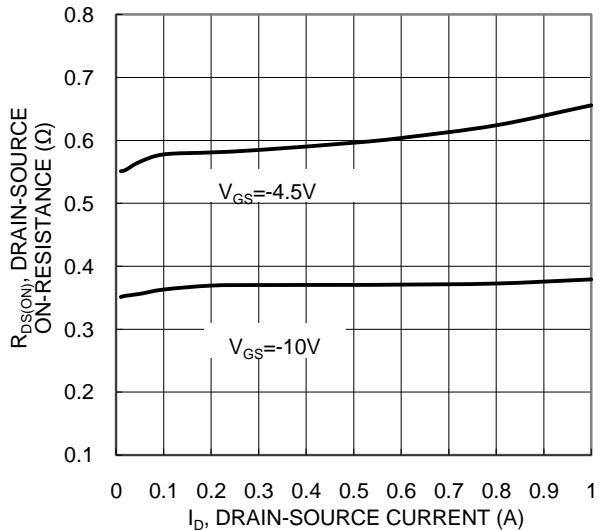


Figure 15. Typical On-Resistance vs. Drain Current and Gate Voltage

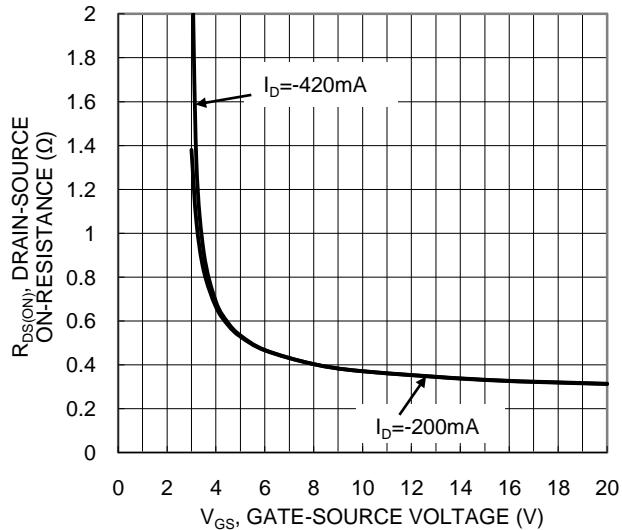


Figure 16. Typical Transfer Characteristic

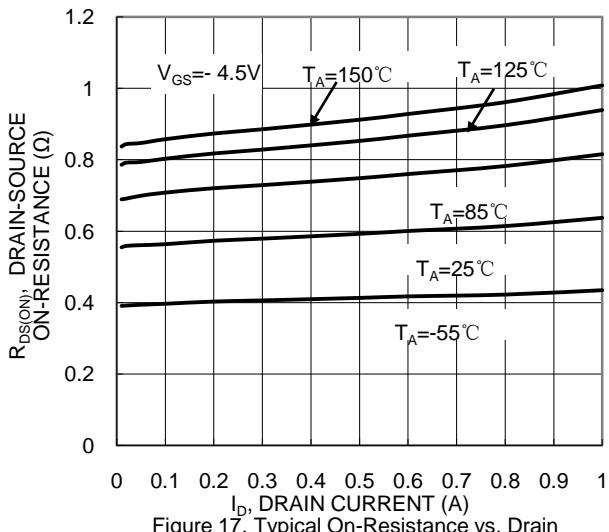


Figure 17. Typical On-Resistance vs. Drain Current and Temperature

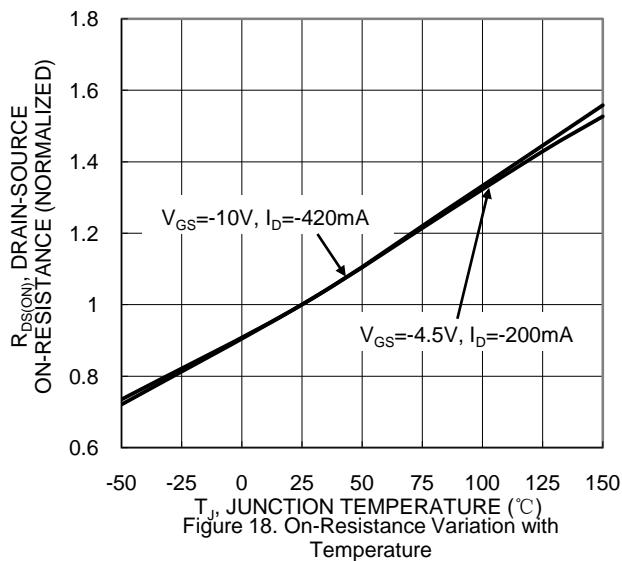
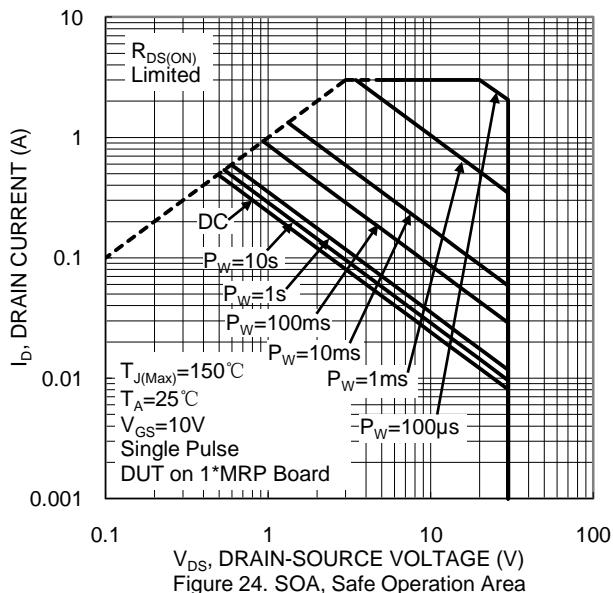
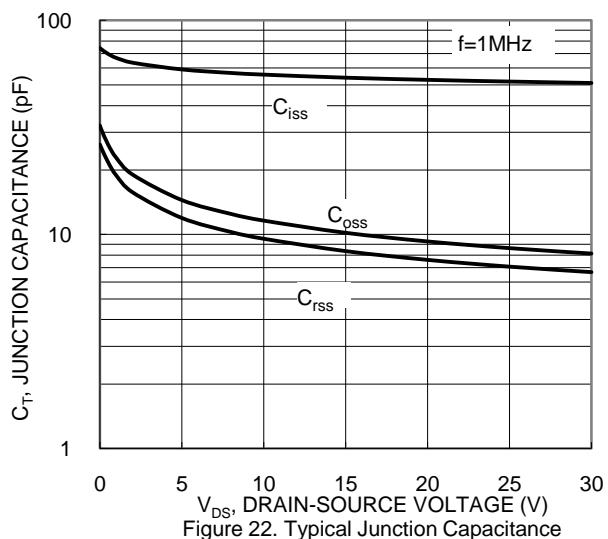
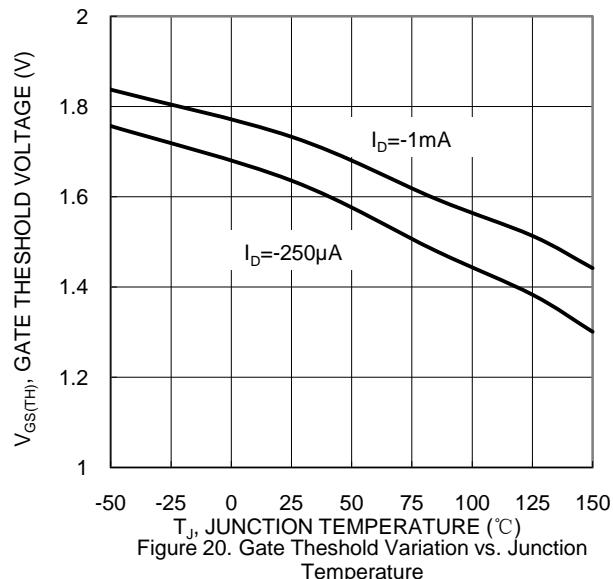
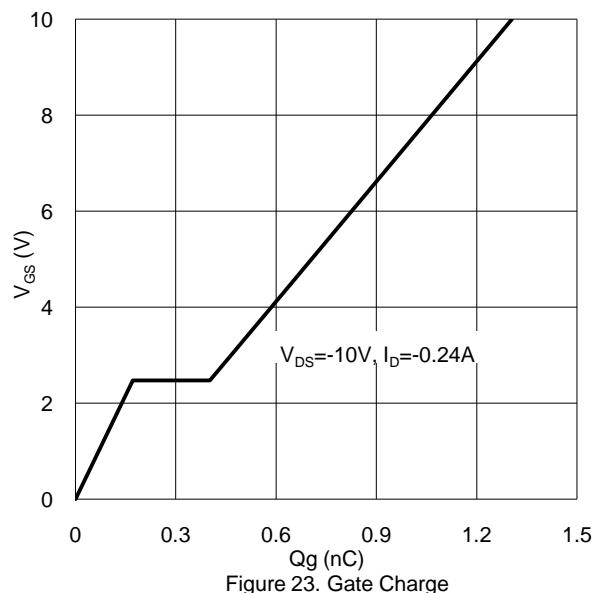
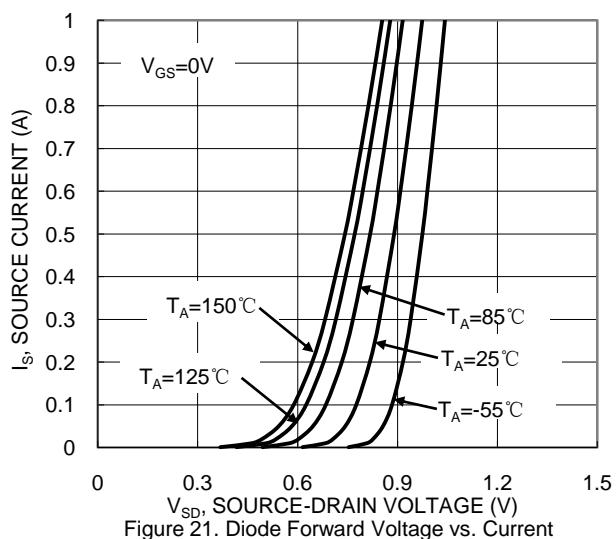
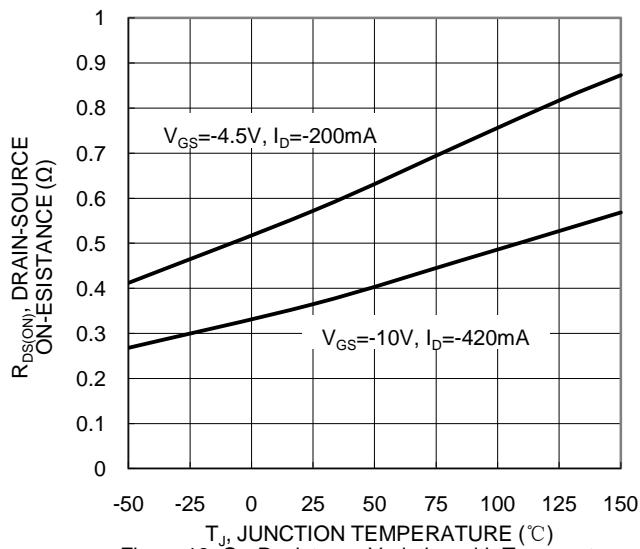
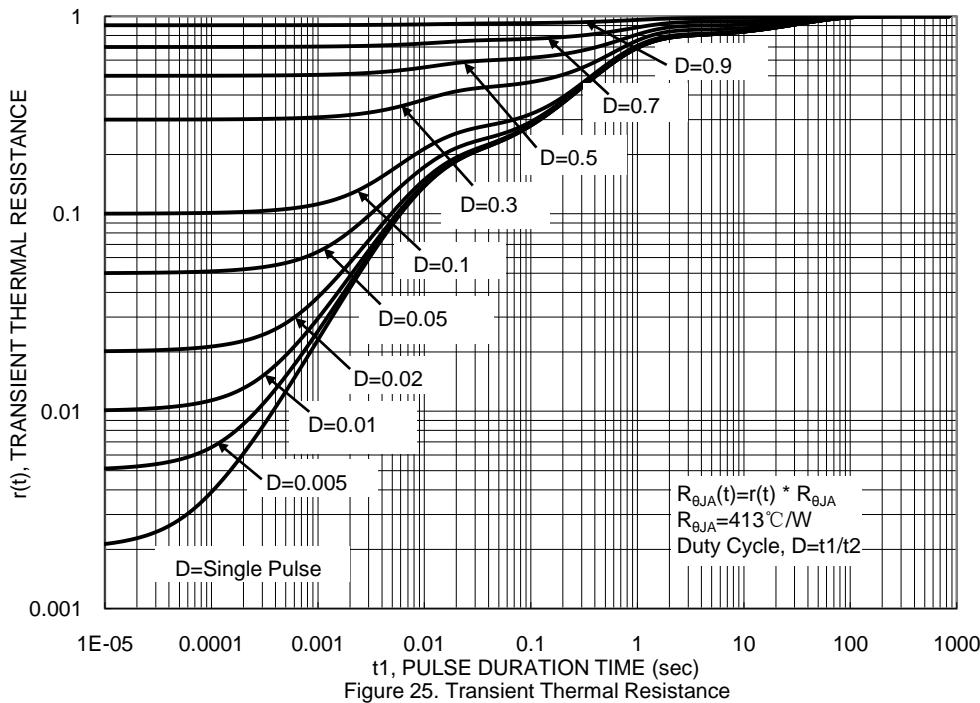


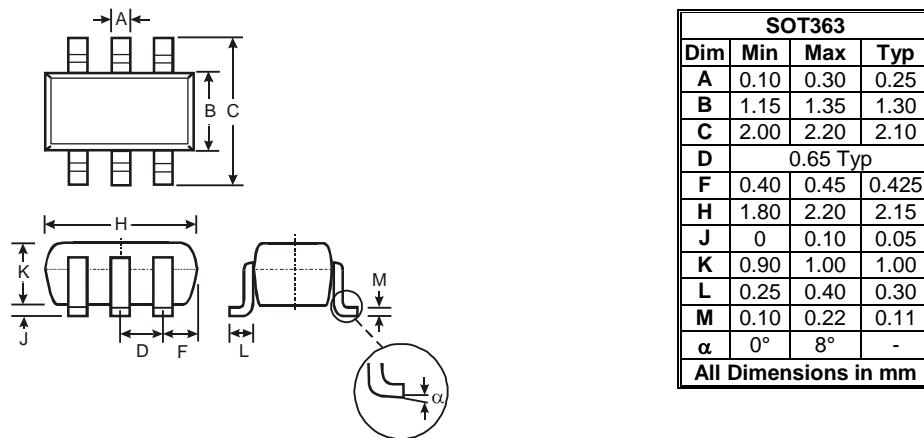
Figure 18. On-Resistance Variation with Temperature





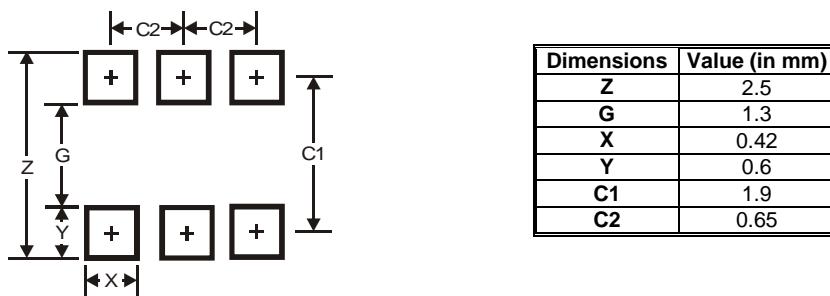
Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> the for latest version.



Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> the for latest version.



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