

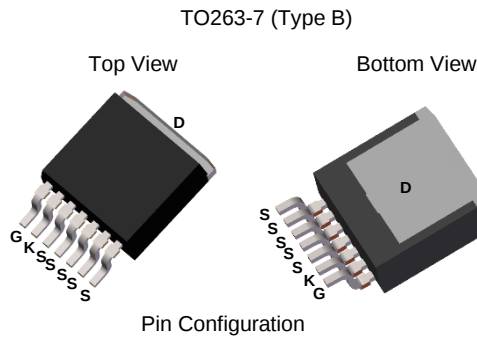
Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D T _C = +25°C
1200V	28.5mΩ @ V _{GS} = 15V	85.5A

Description and Applications

This SiC MOSFET is designed to minimize the on-state resistance yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

- Switch-mode power supplies
- Motor drives
- High-voltage DC-DC converters
- Solar inverters
- EV battery chargers

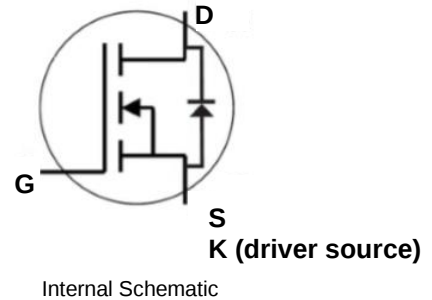


Features and Benefits

- Low On-Resistance
- High BV_{DSS} Rating for Power Application
- Low Input Capacitance
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- The DMWSH120H28SCT7Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: TO263-7
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 1.6 grams (Approximate)

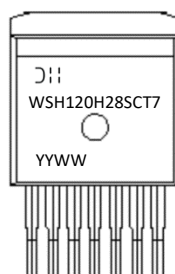


Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMWSH120H28SCT7Q	TO263-7 (Type B)	50	Tube
DMWSH120H28SCT7Q-13	TO263-7 (Type B)	800	Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



DII = Manufacturer's Marking
WSH120H28SCT7 = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 24 = 2024)
WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	1200	V
Gate-Source Voltage	V _{GSmax}	+19/-8	V
Gate-Source Voltage (Recommended Operating Values)	V _{GSop}	+15/-4	V
Continuous Drain Current (Notes 5 & 6)	I _D	85.5 60.5	A
Continuous Diode Forward Current (Note 5)	I _S	68	A
Pulsed Source Current (Pulse Width t _P Limited by T _{J Max}) (Note 5)	I _{SM}	250	A
Pulsed Drain Current (Pulse Width t _P Limited by T _{J Max}) (Note 5)	I _{DM}	250	A

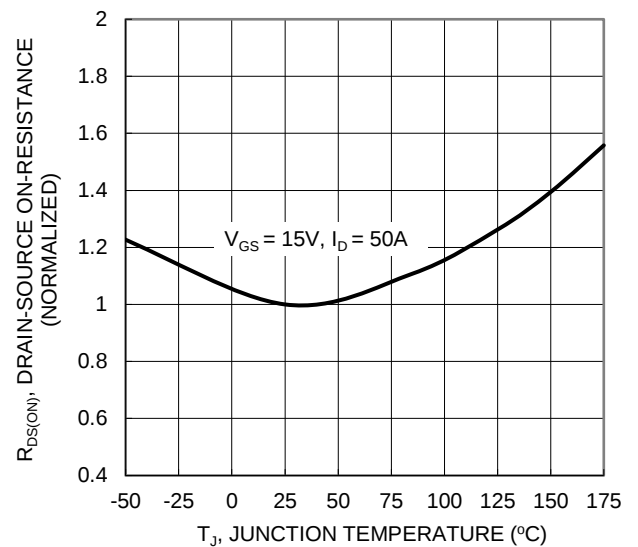
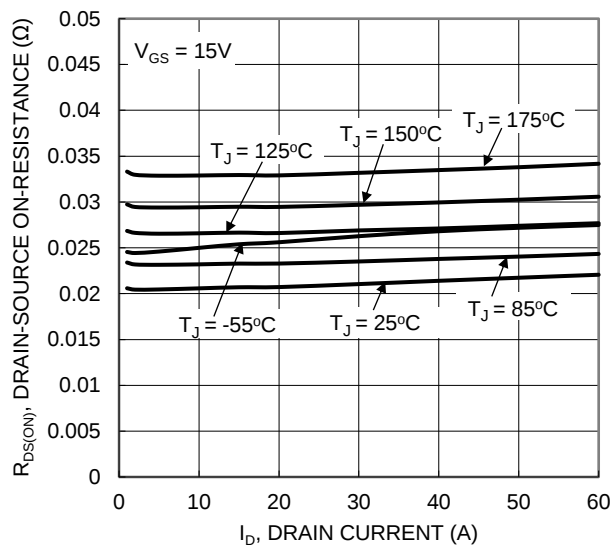
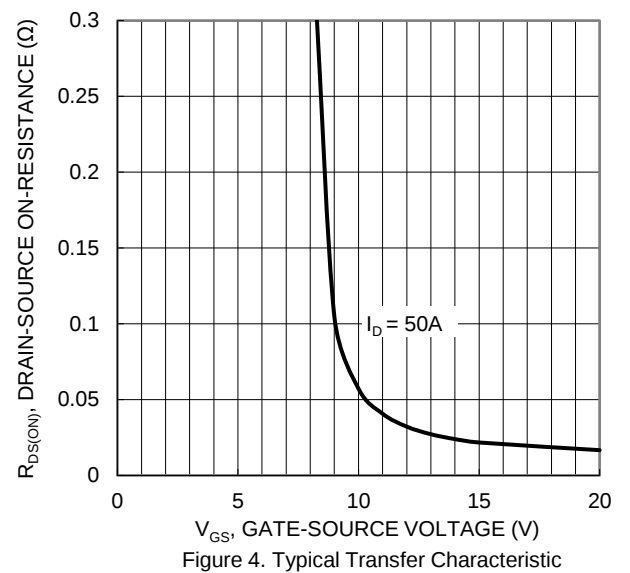
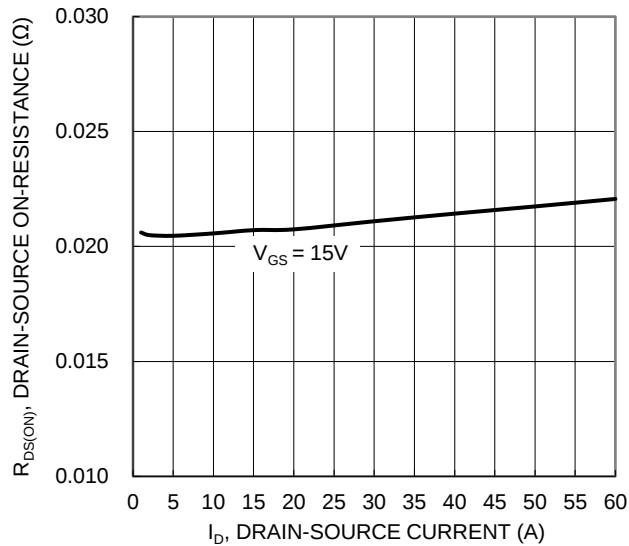
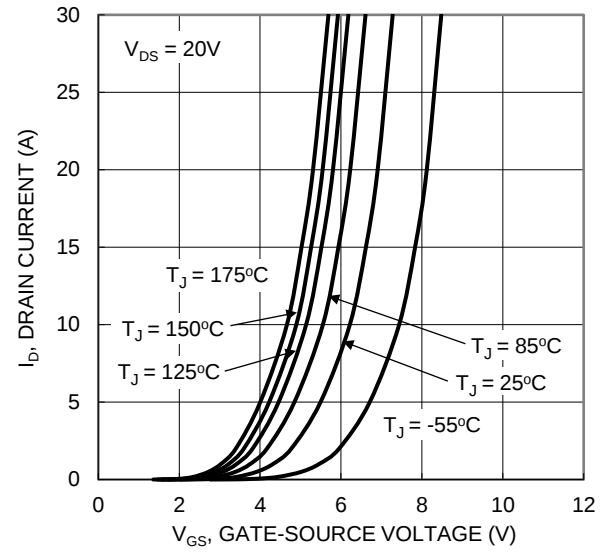
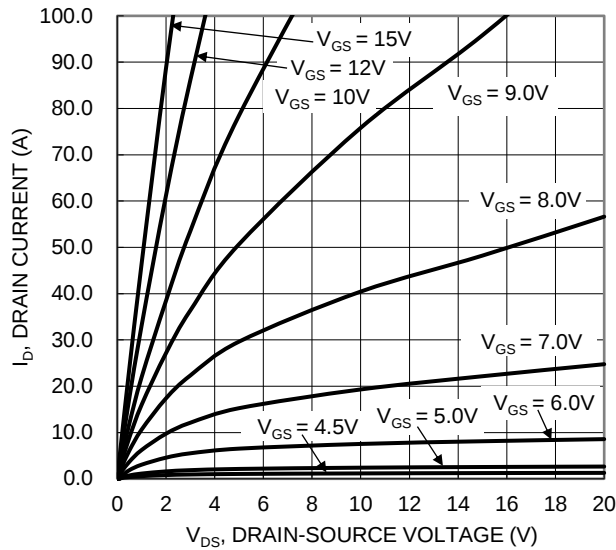
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

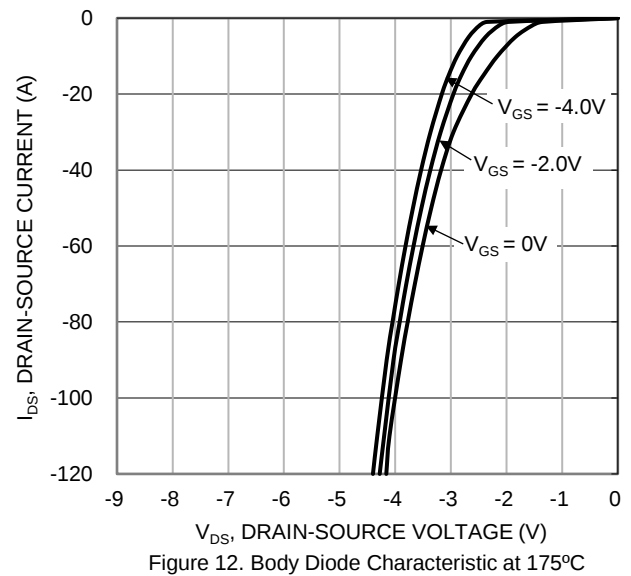
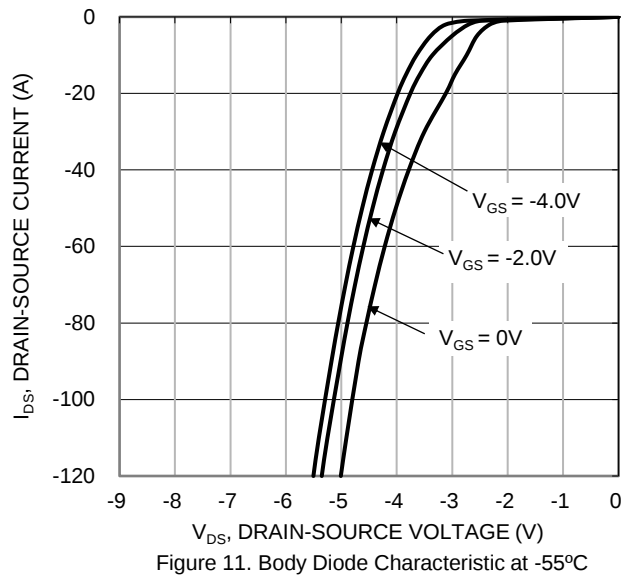
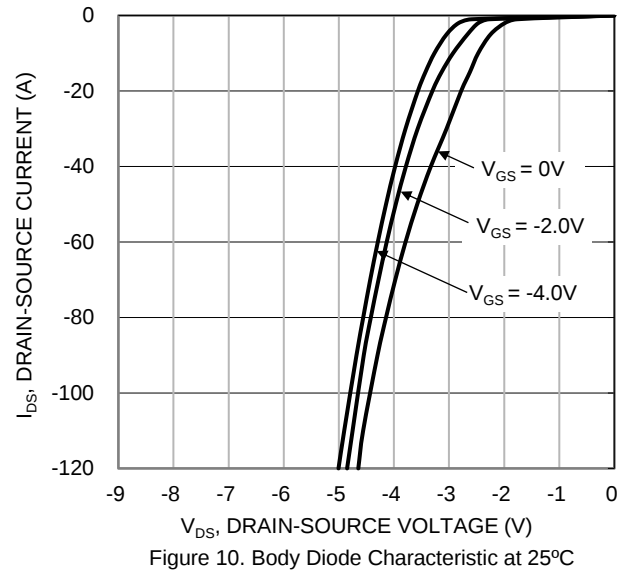
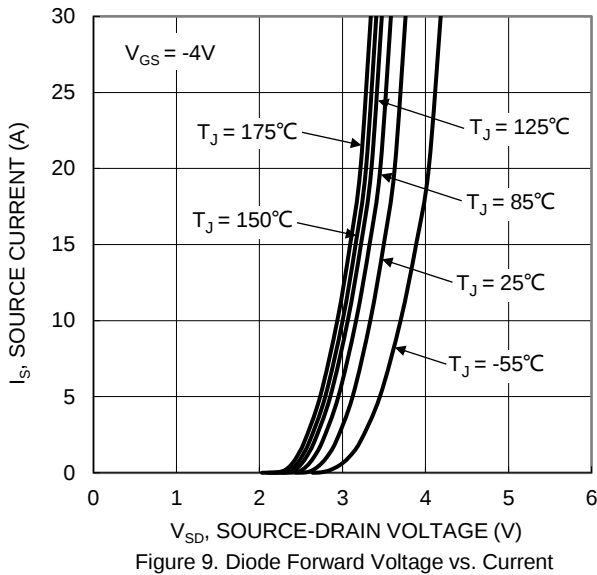
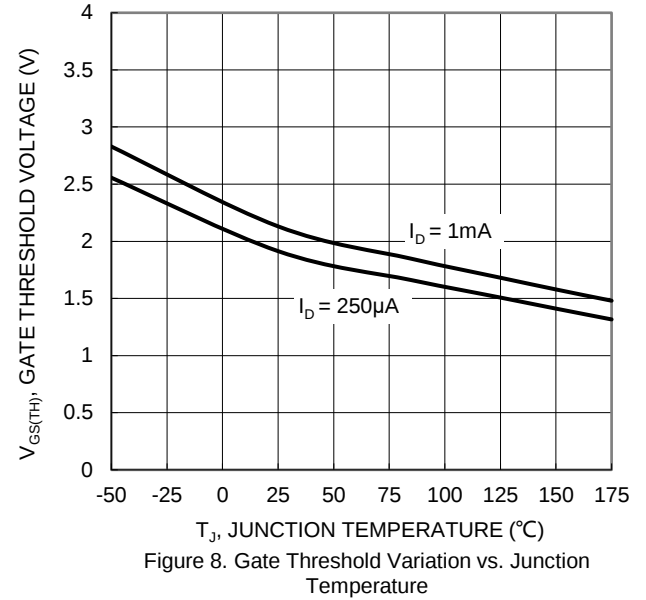
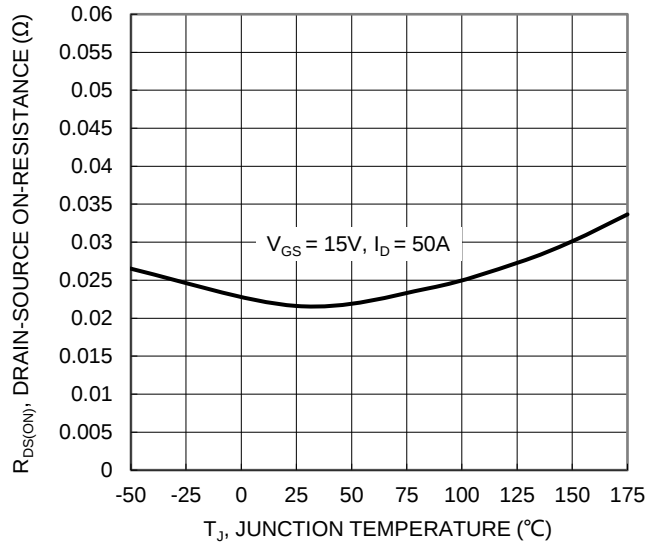
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P _D	312 156	W
Thermal Resistance, Junction to Ambient (Note 7)	R _{θJA}	45	°C/W
Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	0.48	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +175	°C

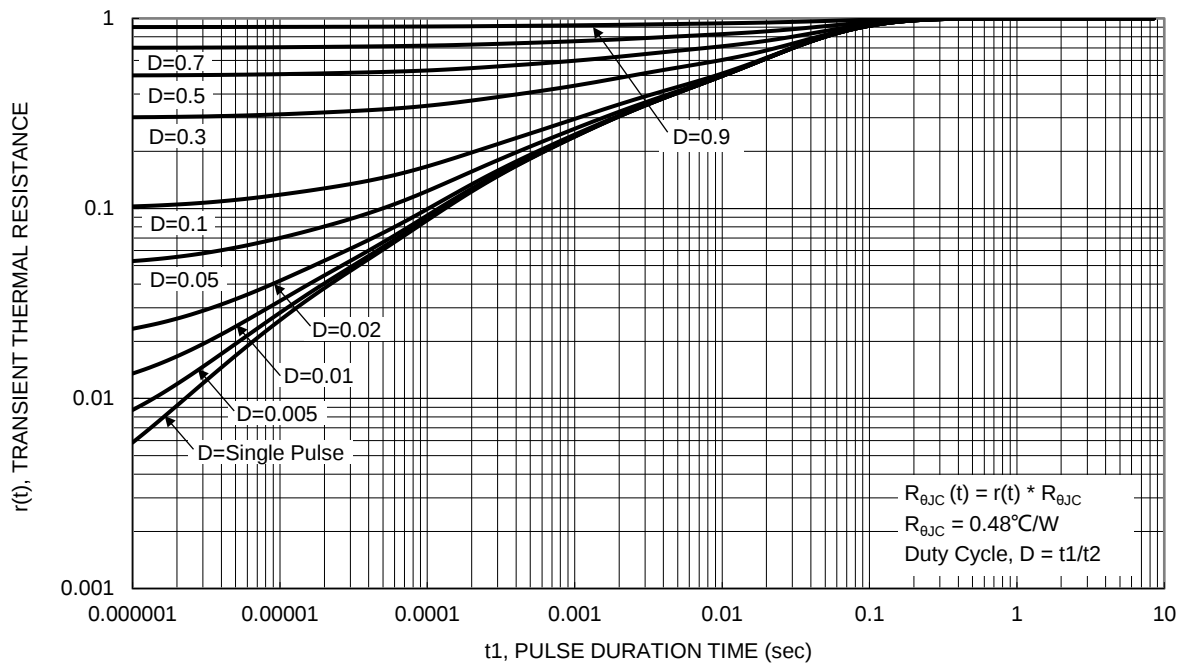
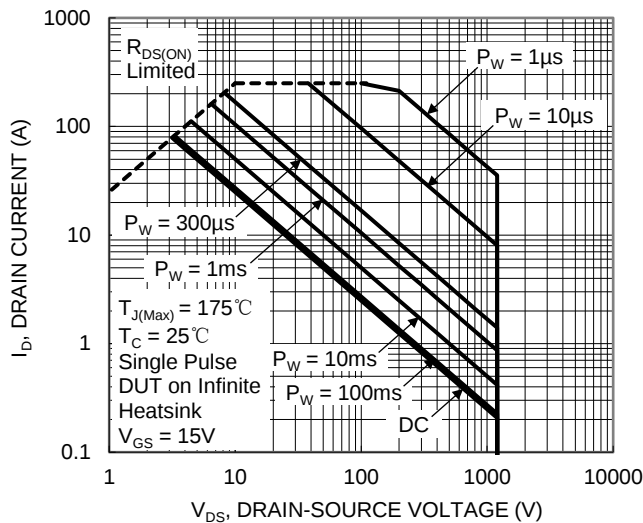
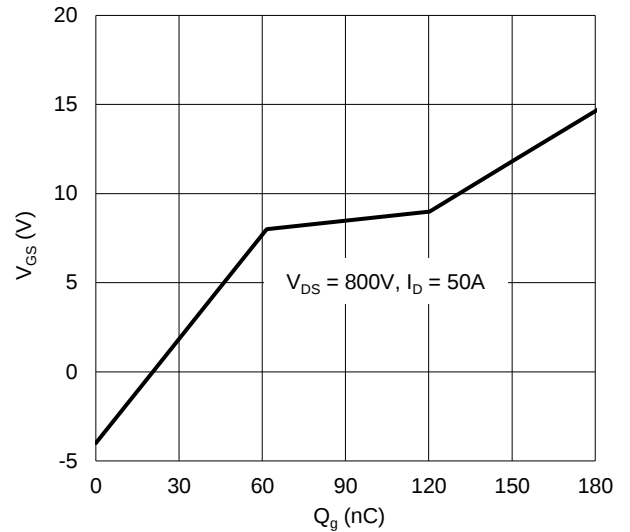
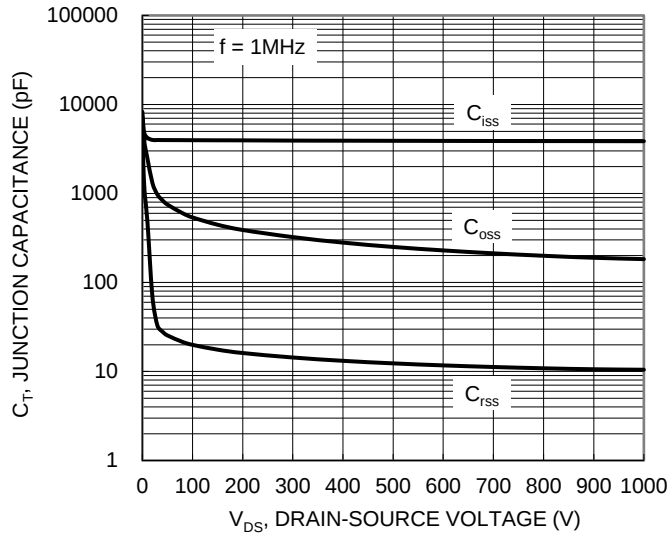
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV _{DSS}	1200	—	—	V	V _{GS} = 0V, I _D = 100μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	50	μA	V _{DS} = 1200V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±250	nA	V _{GS} = +15/-4V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(TH)}	1.8	2.5	3.6	V	V _{DS} = V _{GS} , I _D = 17.7mA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	20	28.5	mΩ	V _{GS} = 15V, I _D = 50A
Diode Forward Voltage	V _{SD}	—	3.7	—	V	V _{GS} = -4V, I _S = 25A
Transconductance	g _{fs}	—	12	—	S	V _{DS} = 20V, I _D = 50A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	3864	—	pF	V _{GS} = 0V, V _{DS} = 1000V, V _{AC} = 25mV, f = 1MHz
Output Capacitance	C _{oss}	—	183	—		
Reverse Transfer Capacitance	C _{rss}	—	10.5	—		
C _{oss} Stored Energy	E _{oss}	—	117	—	μJ	V _{GS} = -4V/+15V, V _{DS} = 800V, R _g = 5Ω, I _D = 50A, L = 157μH
Turn-On Switching Energy (Body Diode Forward)	E _{ON}	—	661	—	μJ	
Turn-Off Switching Energy (Body Diode Forward)	E _{OFF}	—	416	—	μJ	
Gate Resistance	R _g	—	1.25	—	Ω	V _{AC} = 25mV, f = 1MHz
Total Gate Charge	Q _g	—	184	—	nC	V _{GS} = -4V/+15V, V _{DS} = 800V, I _D = 50A
Gate-Source Charge	Q _{gs}	—	61.6	—		
Gate-Drain Charge	Q _{gd}	—	58.7	—		
Turn-On Delay Time	t _{D(ON)}	—	23.6	—	ns	V _{GS} = -4V/+15V, V _{DD} = 800V, R _g = 5Ω, I _D = 50A, Inductive Load
Turn-On Rise Time	t _r	—	39.6	—		
Turn-Off Delay Time	t _{D(OFF)}	—	49.7	—		
Turn-Off Fall Time	t _f	—	15.7	—	ns	V _{GS} = -4V, V _{DS} = 800V, I _D = 50A, di/dt = 2600A/μs
Body Diode Reverse-Recovery Time	t _{RR}	—	21.3	—		
Body Diode Reverse-Recovery Charge	Q _{RR}	—	380	—	nC	
Body Diode Reverse-Recovery Current	I _{RRM}	—	29.5	—	A	

- Notes:
- Device mounted on an infinite heatsink.
 - Drain current limited by maximum junction temperature.
 - Device mounted on FR-4 substrate PC board, 2oz. copper, with minimum recommended pad layout.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to production testing.

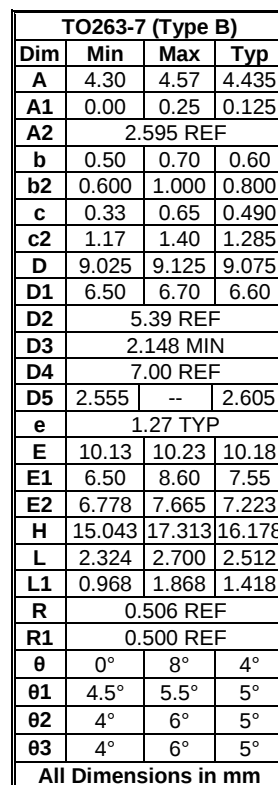






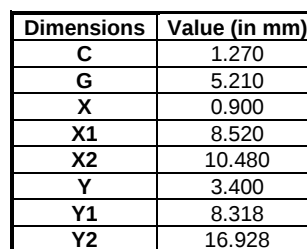
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

TO263-7 (Type B)



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TO263-7 (Type B)



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