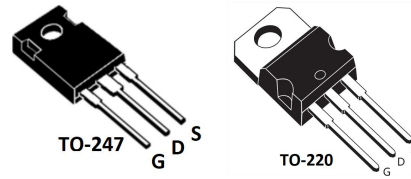


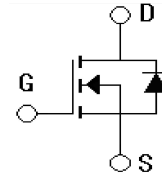
Features

- $V_{DS}=200V, I_D=100A$
 $R_{DS(on)}=23m\Omega @ V_{GS}=10V$
- High density cell design for ultra low $R_{DS(on)}$
- Low gate charge
- Improved dv/dt capability
- RoHS product



Applications

- Power Management for Inverter Systems



Absolute Ratings ($T_C=25^\circ C$)

Parameter	Symbol		Limit	Unit
Drain-Source Voltage	V _{DSS}		200	V
Transient Gate-Source Voltage	V _{GSS}		± 30	V
Continuous Gate-Source Voltage	V _{GSS}		± 20	V
Drain Current-continuous	I _D		100	A
Drain Current-pulse(note1)	I _{DM}		400	A
Single Pulsed Avalanche Energy (note2)	E _{AS}		833	mJ
Maximum Power Dissipation	PD	T _C =25℃	312	W
		T _C =100℃	125	
Operating and Storage Temperature Range	T _J , T _{STG}		-55~+150	℃

Electrical Characteristics($T_{CASE}=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=50A$ (note 3)	-	23	25	m Ω

Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz (note 4)	-	5871	-	pF
Output capacitance	C _{oss}		-	392	-	pF
Reverse transfer capacitance	C _{rss}		-	165	-	pF
Switching-Characteristics						
Turn-On delay time	t _{d(on)}	V _{DS} =100V, I _D =50A, V _{GS} =10V R _G =4Ω	-	29	-	ns
Turn-On rise time	t _r		-	45	-	ns
Turn-Off delay time	t _{d(Off)}		-	22	-	ns
Turn-Off rise time	t _f		-	41	-	ns
Total Gate Charge	Q _g	V _{DS} =100V, I _D =50A, V _{GS} =10V (note 4)	-	130	-	nC
Gate-Source charge	Q _{gs}		-	22	-	nC
Gate-Drain charge	Q _{gd}		-	38	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current	V _{SD}	V _{GS} =0V, I _S =50A (note 3)		0.85	1.2	V
Diode Forward Current	I _S	TC=25°C	-	-	100	A
Reverse recovery time	T _{rr}	I _S =50A,	-	80		nS
Reverse recovery charge	Q _{rr}	di/dt=100A/μs	-	160		nC

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case	$R_{th(j-C)}$	0.4	$^\circ C/W$
Thermal Resistance,junction to Ambient	$R_{th(j-A)}$	40	$^\circ C/W$

Notes:

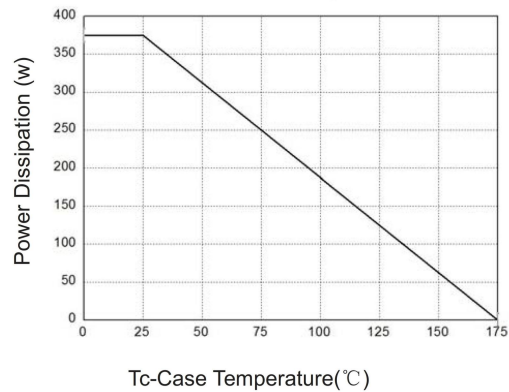
1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. $L = 15\text{ mH}, I_{AS} = 10\text{ A}, V_{DD} = 50V, R_G = 25\ \Omega, \text{ Starting } T_J = 25^\circ C$
3. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
4. Essentially independent of operating temperature

Ordering Codes

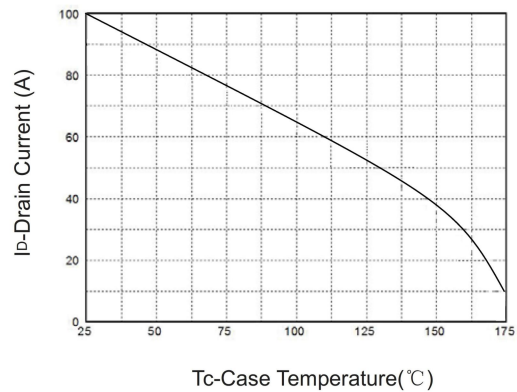
Part Number	Marking	package
MS100N20IDC0	MS100N20IDC0	TO-247
MS100N20IDT0	MS100N20IDT0	TO-220

Electrical Characteristics

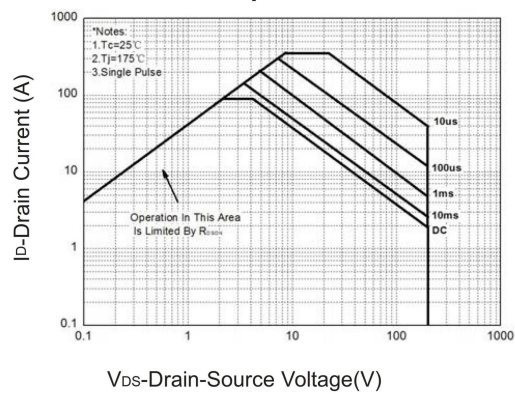
Power Dissipation



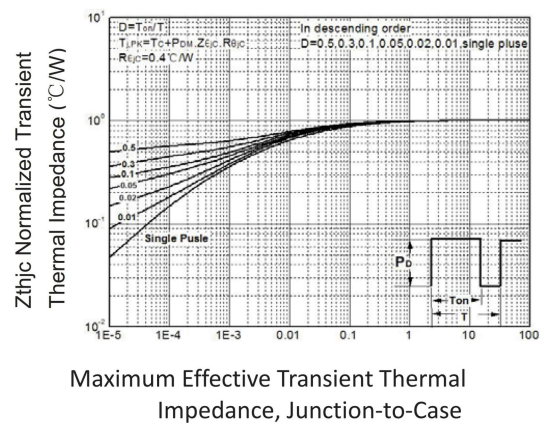
Drain Current



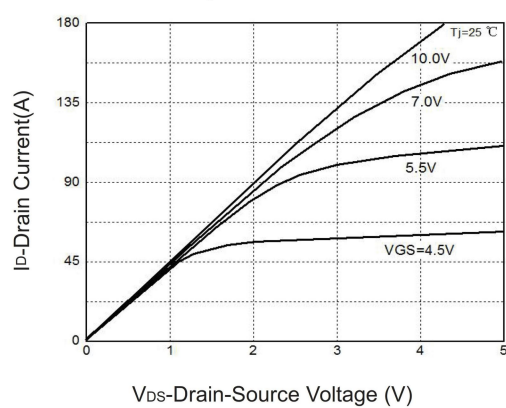
Safe Operation Area



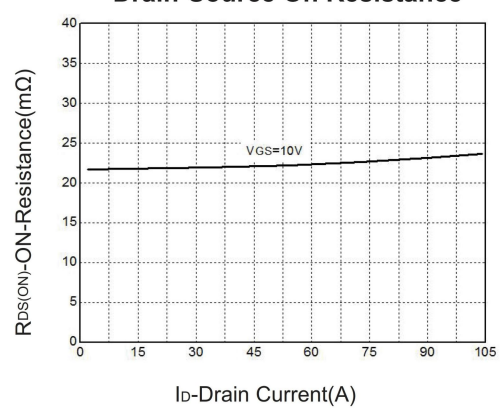
Thermal Transient Impedance



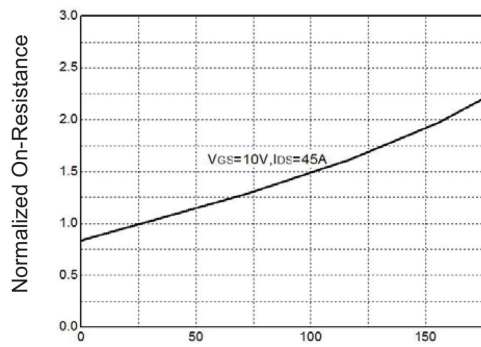
Output Characteristics



Drain-Source On Resistance

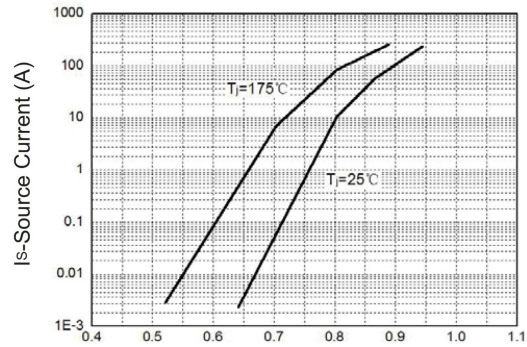


On-Resistance vs. Temperature



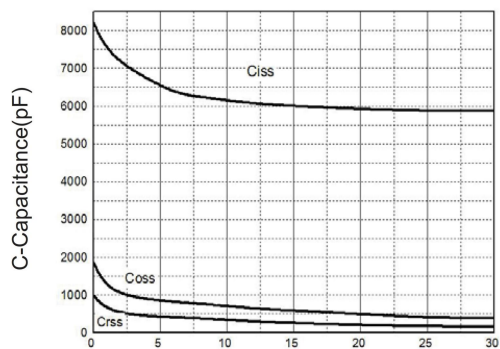
T_j-Junction Temperature (°C)

Source-Drain Diode Forward



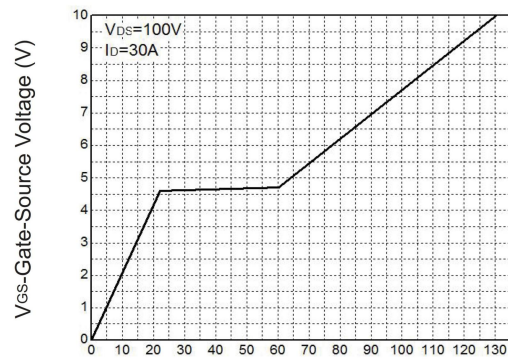
V_{SD}, Source-Drain Voltage(V)

Capacitance Characteristics



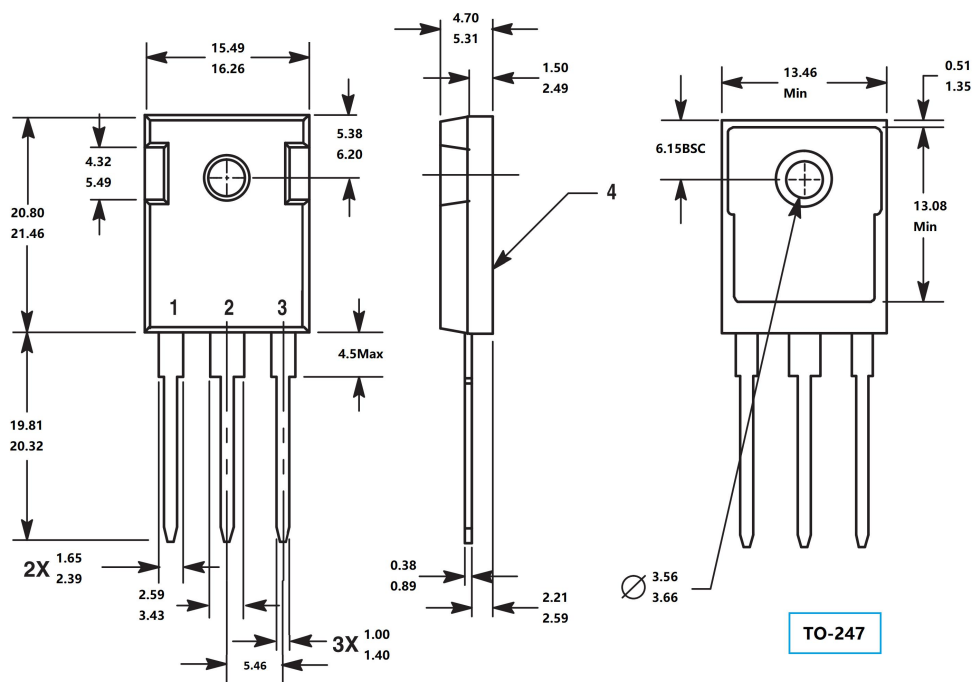
V_{DS}-Drain-Source Voltage (V)

Gate Charge Characteristics



Q_G-Gate Charge (nC)

Package Mechanical DATA



TO-247

