

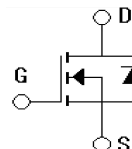
Features

- $V_{DS}=1000V, I_D=25A$
- Low C_{rss}
- Low gate charge
- Improved dv/dt capability



Applications

- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- UPS



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

Parameter	Symbol		Limit	Unit
Drain-Source Voltage	V _{DSS}		1000	V
Transient Gate-Source Voltage	V _{GSM}		±30	V
Continuous Gate-Source Voltage	V _{GSS}		±20	V
Drain Current-continuous	I _D	T _C =25℃	25	A
		T _C =100℃	17	
Drain Current-pulse(note1)	I _{DM}		100	A
Single Pulsed Avalanche Energy(note2)	E _{AS}		2000	mJ
Repetitive Avalanche Current(note1)	I _{AR}		20	A
Maximum Power Dissipation (TO-247)	P _D	T _C =25℃	520	W
		T _C =100℃	208	W
Maximum Power Dissipation (TO-220F)	P _D	T _C =25℃	83	W
		T _C =100℃	33	W
Operating and Storage Temperature Range	T _J ,T _{STG}		-55~+150	℃
Soldering temperature, wave soldering only allowed at leads.(1.6mm for 10s)	T _L		260	

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

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	1000	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}, T_C=25^\circ C$	-	-	1	μA
		$V_{GS}=0V, T_C=125^\circ C$	-	-	100	μA

Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	3	4	5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 8A$ (note3)	-	0.26	0.34	Ω
Forward Transconductance	g_{fs}	$V_{DS} = 40V, I_D = 8A$ (note3)	-	28.4	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS} = 100V,$ $V_{GS} = 0V,$ $f = 1.0MHz$ (note4)	-	1500	-	pF
Output capacitance	C_{oss}		-	160	-	pF
Reverse transfer capacitance	C_{rss}		-	3	-	pF

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

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Switching-Characteristics						
Turn-On delay time	t _{d(on)}	V _{DS} =50V,I _D =25A, V _{GS} =10V,R _G =4.7Ω	-	35	-	ns
Turn-On rise time	t _r		-	30	-	ns
Turn-Off delay time	t _{d(Off)}		-	75	-	ns
Turn-Off rise time	t _f		-	18	-	ns
Total Gate Charge	Q _g	V _{DS} =800V,I _D =25A, V _{GS} =10V(note4)	-	56	-	nC
Gate-Source charge	Q _{gs}		-	12	-	nC
Gate-Drain charge	Q _{gd}		-	32	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Drain-Source Diode Forward voltage	V _{SD}	V _{GS} =0V,I _S =1A (note3)	-	0.71	1.2	V
Diode Forward Current	I _S	I _S =25A,di _F /dt=100A/μs V _R =60V,V _{GS} =0V	-	-	25	A
Reverse recovery time	T _{rr}		-	650	-	ns
Reverse recovery charge	Q _{rr}		-	12	-	μC
Reverse recovery current	I _{rr}		-	20	-	A

Thermal Characteristics

Parameter	Symbol	Value		Unit
		TO-247	TO-220F	
Thermal Resistance, junction to Case	$R_{th(j-c)}$	0.24	1.5	$^\circ C/W$

Thermal Resistance, junction to Ambient	$R_{th(j-A)}$	40	52	$^{\circ}\text{C/W}$
---	---------------	----	----	----------------------

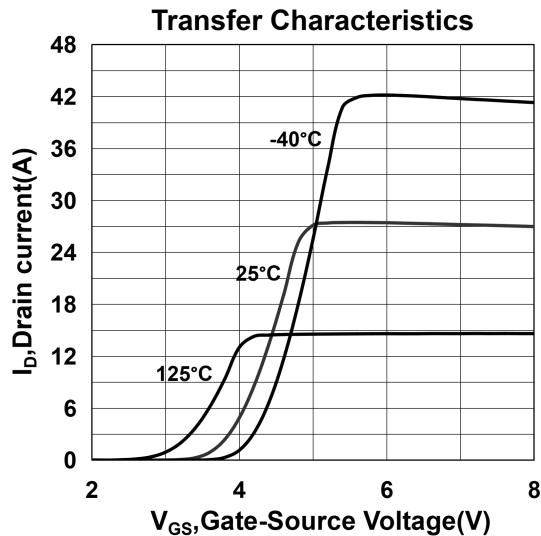
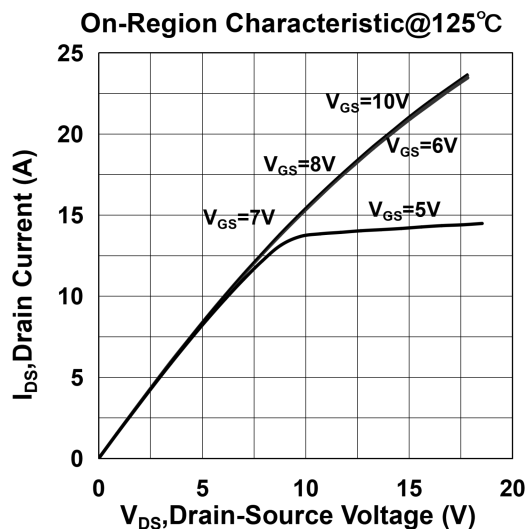
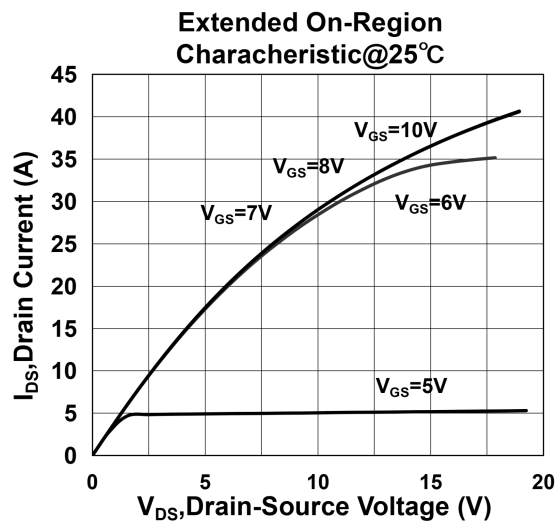
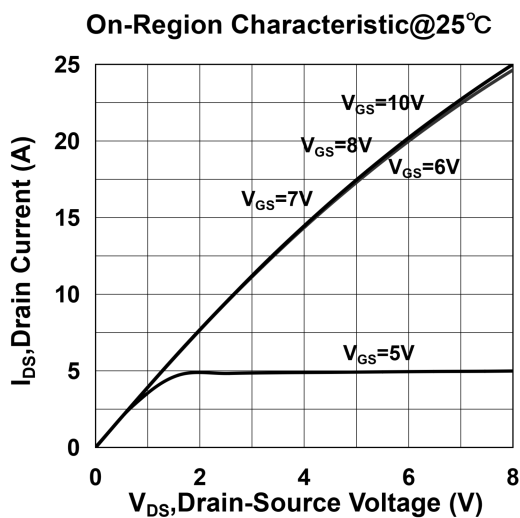
Order information

Order Codes	Package	Packaging
MS25N100HCC0	T0-247	Tube
MS25N100HCT1	T0-220F	Tube

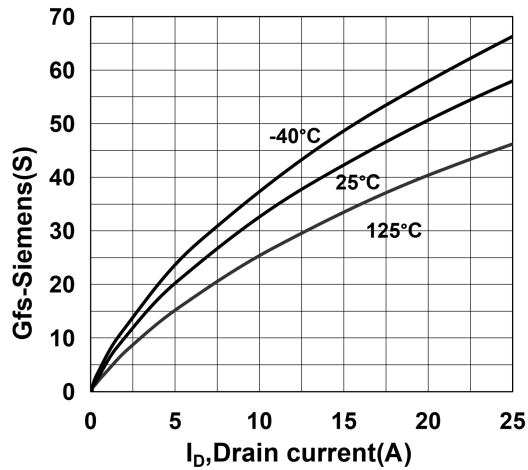
Notes:

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

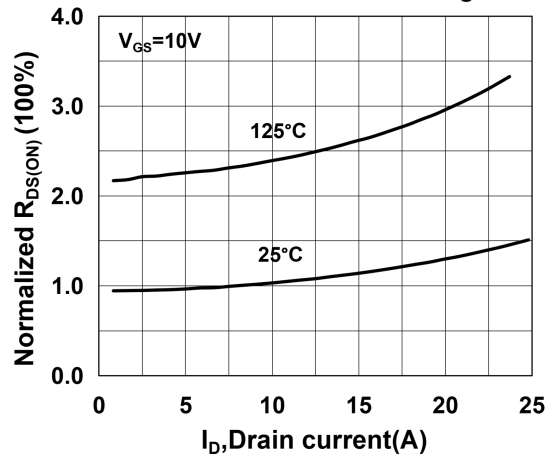
Electrical Characteristics



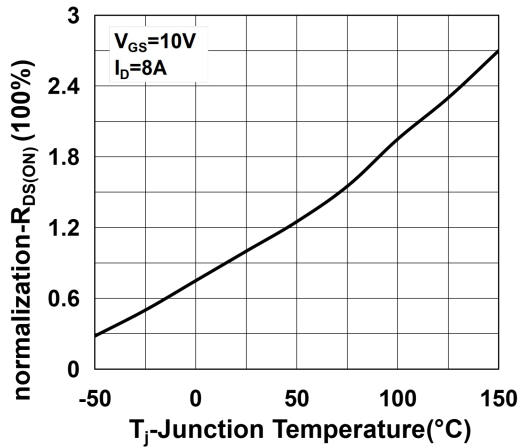
Transconductance



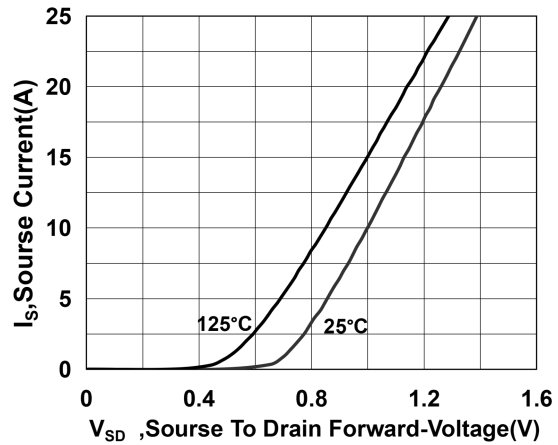
Normalized On-Resistance Variation vs Drain Current and Gate Voltage



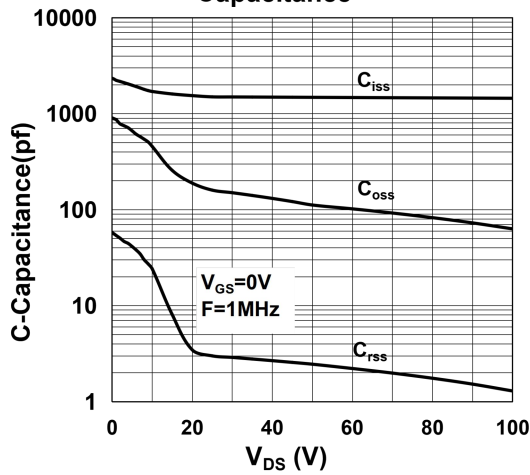
Normalization On-Resistance Variation vs Junction Temperature



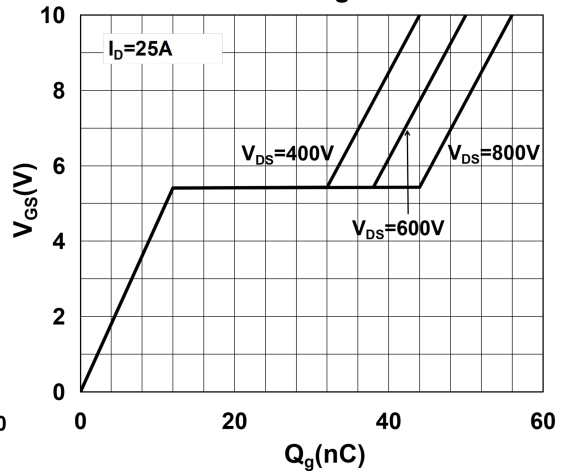
Body Diode Forward Voltage Variation with Source Current and Temperature



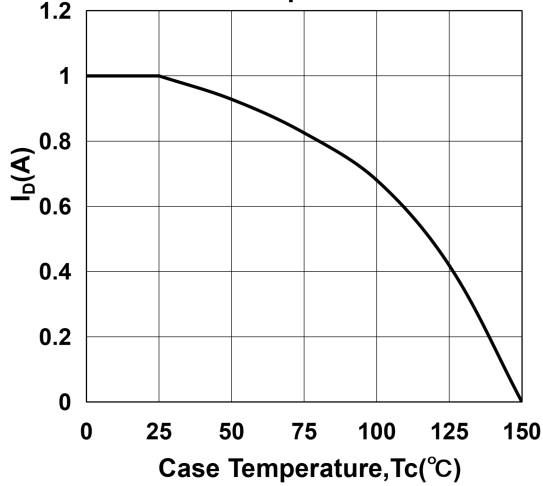
Capacitance



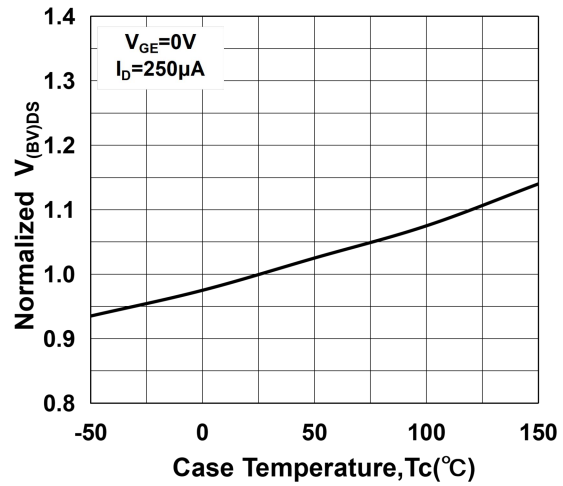
Gate Charge



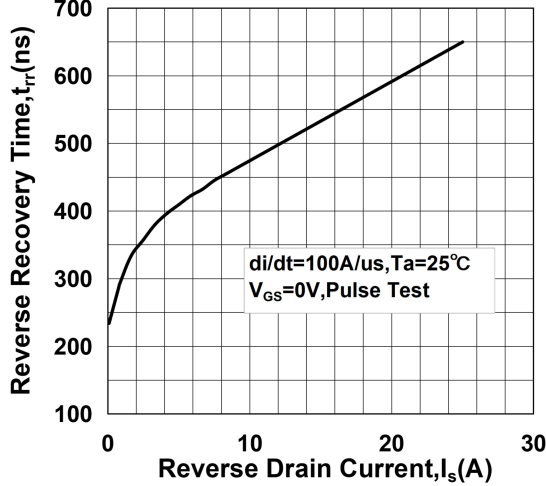
Maximum Drain Current vs Case Temperature



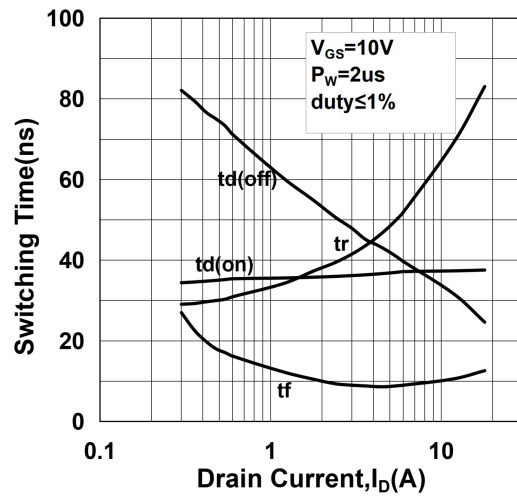
Normalized $V_{(BV)DS}$ vs temperature



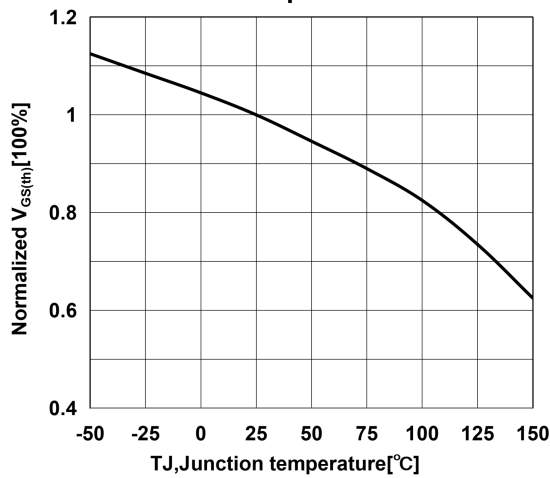
Body Diode Reverse Recovery Time vs Source to Drain Current



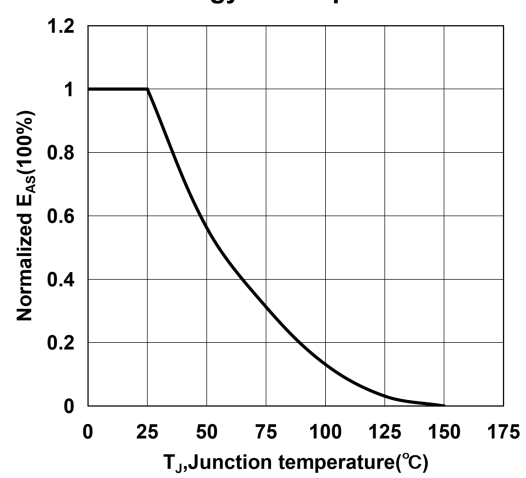
Switching Characteristics



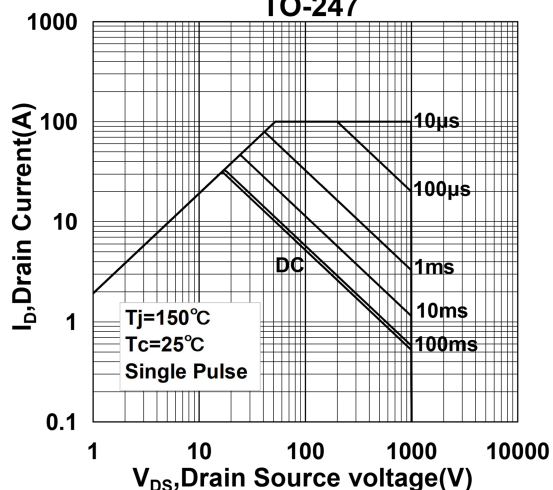
Normalized gate threshold voltage vs temperature



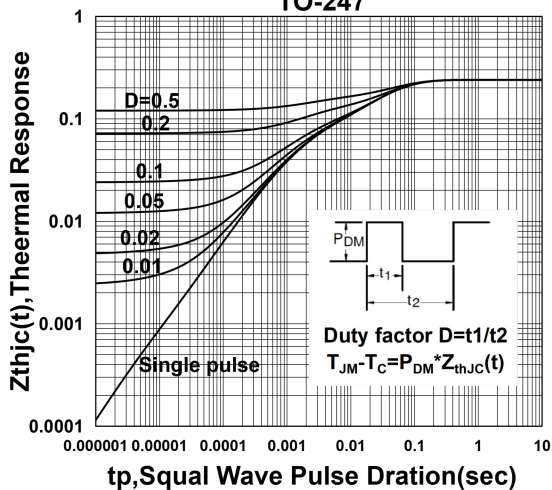
Normalized maximum avalanche energy vs temperature



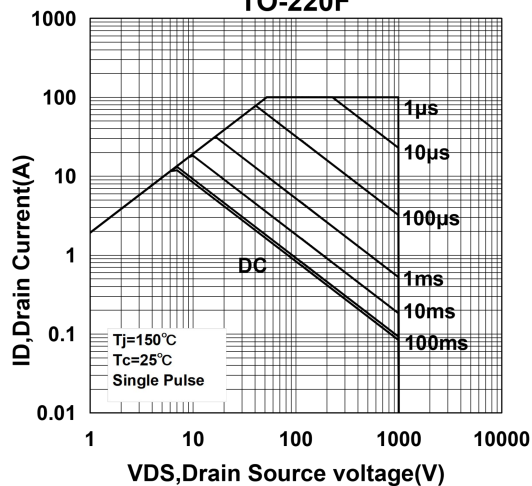
Safe Operating Area for
TO-247



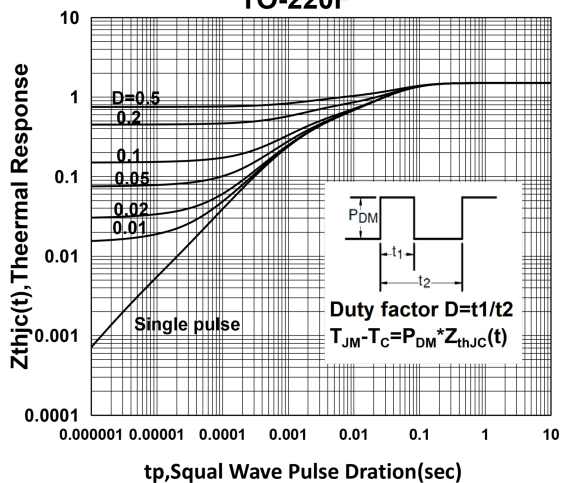
Transient response Curve for
TO-247



Safe Operating Area for
TO-220F



Transient response Curve for
TO-220F



Package Mechanical Data

