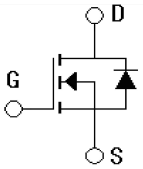
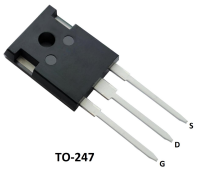
MS30N90ICE0/C0

Features

- Very low $R_{DS(on)}$
- Very low Qg
- 100% avalanche tested
- Easy to use/drive
- RoHS compliant





Applications

- Uninterruptible Power Supply
- Power Factor Correction

Absolute Ratings (Tc=25℃)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	900	V
Drain Current-continuous	I_D,T=25℃	30	A
	T=100℃	22	A
Drain Current-pulse (note 1)	I_{DM}	120	A
Gate-Source Voltage	V_{GSS}	±30	V
Single Pulsed Avalanche Energy (note 2)	E_{AS}	280	mJ
Repetitive Avalanche Energy(note 2)	E_{AR}	0.5	mJ
Avalanche Current	I_{AR}	7.5	A
Power Dissipation	PD TC=25℃	240	W
	Derate above 25℃	1.92	W/℃
Operating and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	I_D=250μA,V_{GS}=0V	900	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=900V,V_{GS}=0V	-	-	1	μA
		V_{DS}=900V，T_C=150℃	-	-	100	μA
Gate body leakage current	I_{GSS}	V_{DS}=0V,V_{GS}=±30V	-	-	±100	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2.7	3.8	5.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=15V,I_D=20A	-	167	222	mΩ
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, f=1.0MHZ	-	2840	-	pF
Output capacitance	C_{oss}		-	220	-	pF
Reverse transfer capacitance	C_{rss}		-	16	-	pF

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DD}=400V,I_D=30A, R_G=25Ω	-	49	-	ns
Turn-On rise time	t_r		-	42	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	166	-	ns
Turn-Off rise time	t_f		-	23	-	ns
Total Gate Charge	Q_g	V_{DS}=720V,I_D=30A, V_{GS}=10V	-	62	-	nC
Gate-Source charge	Q_{gs}		-	15	-	nC
Gate-Drain charge	Q_{gd}		-	23	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Body Diode Forward Current	I_{SD}	T_C=25℃	-	-	30	A
Body Diode Forward Voltage	V_{SD}	I_{SD}=1A,V_{GS}=0V	-	0.68	1.2	V
Reverse recovery time	t_{rr}	V_R=400,I_F=30A dI_F/dt=100A/μs	-	680	-	ns
Reverse recovery charge	Q_{rr}		-	9	-	μC
Peak Reverse Recovery Current	I_{rrm}		-	24	-	A

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case	R_{th}(j-C)	0.52	℃/W
Thermal Resistance,junction to Ambient	R_{th}(j-A)	62	℃/W

Notes:

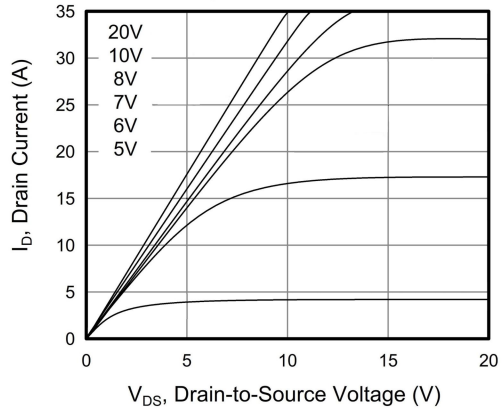
1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_D = 10A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
3. Identical low side and high side switch with identical R_G

Order Message

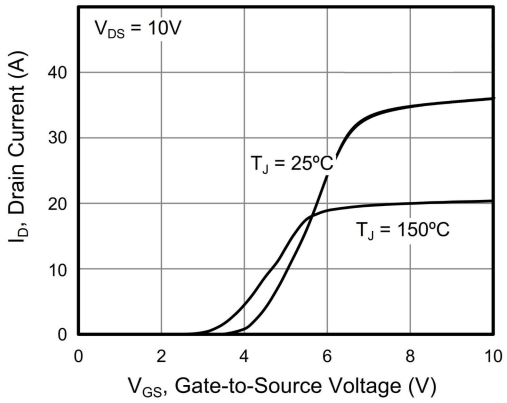
Marking	Package
MS30N90ICE0	TO-263
MS30N90ICC0	TO-247

Typical Characteristics (TJ = 25° C, unless otherwise noted)

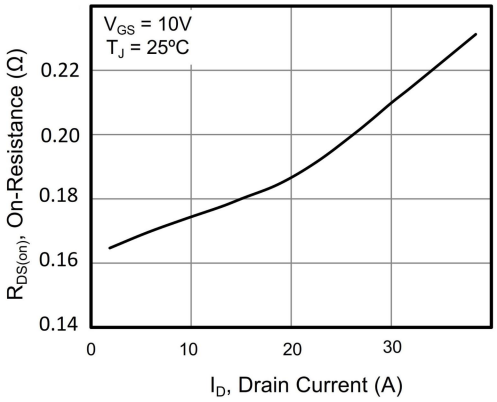
Output Characteristics



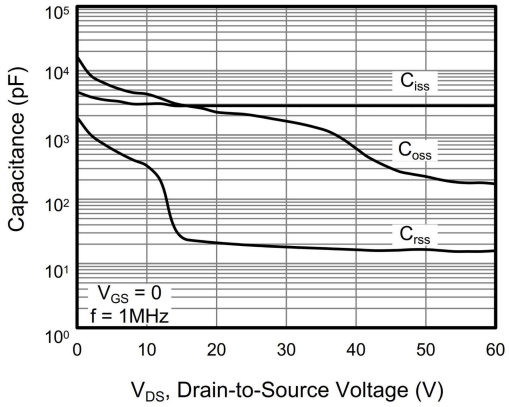
Transfer Characteristics



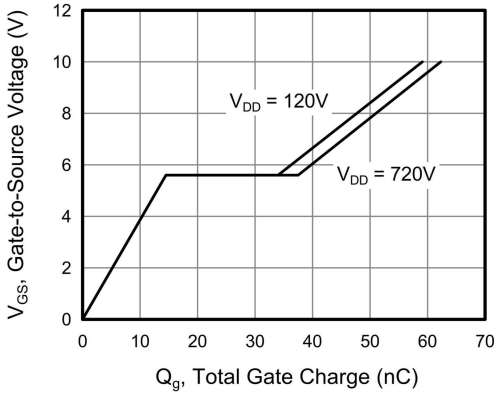
On-Resistance vs. Drain Current



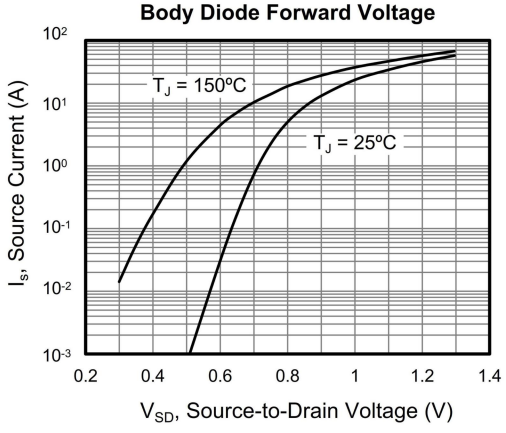
Capacitance



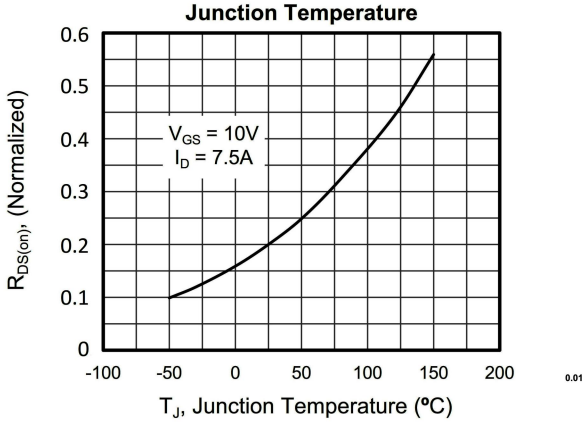
Gate Charge



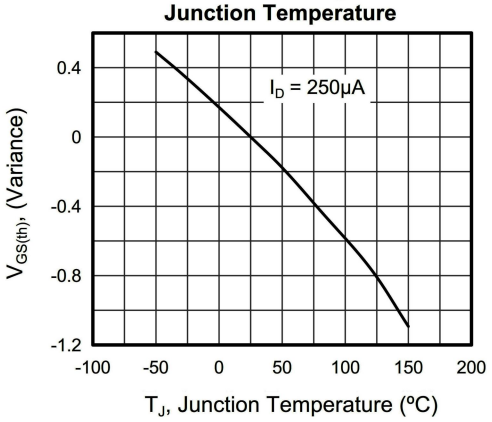
Body Diode Forward Voltage



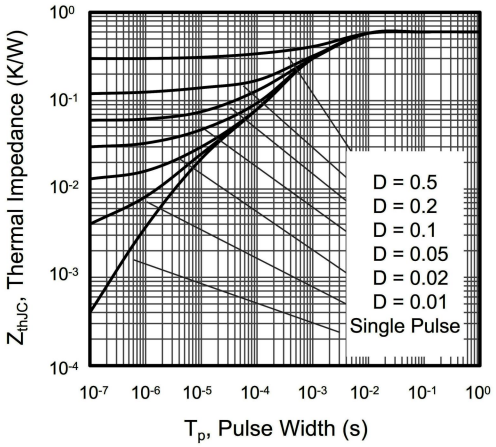
On-Resistance vs. Junction Temperature



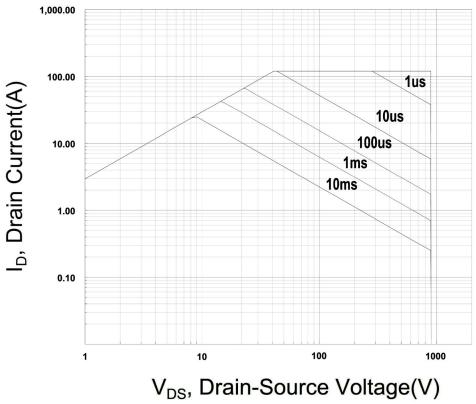
Threshold Voltage vs. Junction Temperature



Transient Thermal Impedance



Safe Operation Area



Package Mechanical DATA