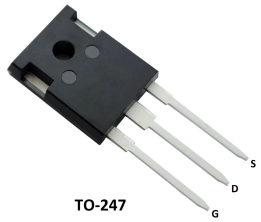
MS15N120HGC0

Planar Process NMOS

Features

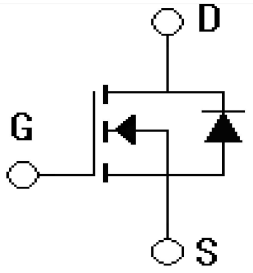
- V_{DS}=1200V,I_D=15A
  $R_{DS(on)}$<0.8Ω @ V_{GS}=10V
- High density cell design for ultra low Rdson
- Low gate charge
- Improved dv/dt capability
- RoHS product



TO-247

Applications

- High Voltage Switched-mode and resonant-mode power supplies
- High Voltage Pulse Power Applications
- High Voltage Discharge circuits in Lasers Pulsers, Spark Igniters, RF Generators
- High Voltage DC-DC converters
- High Voltage DC-AC inverters



Absolute Ratings (Tc=25℃)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	1200	V
Gate-Source Voltage	V_{GSS}	±30	V
Drain Current-continuous	I_D (25℃)	15	A
	I_D (100℃)	10	
Drain Current-pulse	I_{DM}	35	A
Single Pulsed Avalanche Energy	E_{AS}	480	mJ
Maximum Power Dissipation	PD TC=25℃	960	W
	Derate above 25℃	7.7	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=1mA,V_{GS}=0V	1200	-	-	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}=±30V，V_{DS}=0V	-	-	±100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2.5	-	5.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=1A	-	0.68	0.8	Ω
Forward Transconductance	g_{fs}	V_{DS}=20V,I_D=7A	-	20	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	4890	-	pF
Output capacitance	C_{oss}		-	353	-	pF
Reverse transfer capacitance	C_{rss}		-	21	-	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_{DS}=600V,I_D=7A, R_G=25Ω,V_{GS}=10V	-	101	-	ns
Turn-On rise time	t_r		-	66	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	244	-	ns
Turn-Off rise time	t_f		-	56	-	ns
Total Gate Charge	Q_g	V_{DS}=600V,I_D=7A, R_G=25Ω,V_{GS}=10V	-	100	-	nC
Gate-Source charge	Q_{gs}		-	34	-	nC
Gate-Drain charge	Q_{gd}		-	37	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Curret	V_{SD}	V_{GS}=0V,I_S=15A	0.5	-	1.2	V
Diode Forward Current	I_S	TC=25℃	-	-	15	A
Reverse recovery time	Trr	I_S=7A,dI/dT=100A/μS VR=100V,VGS=0V	-	0.65	-	nS
Reverse recovery charge	Qrr		-	7.65	-	μC

Thermal Characteristic

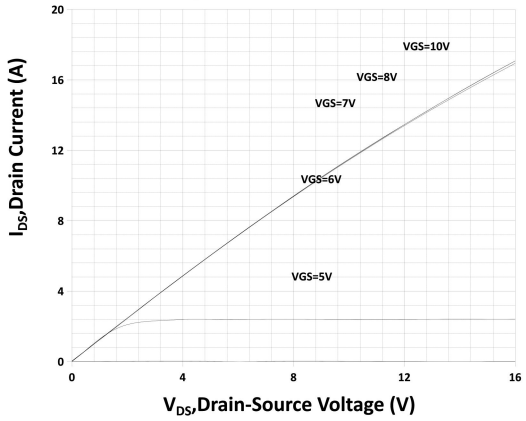
Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case	R_{th}(j-C)	0.17	℃/W
Thermal Resistance,junction to Case	R_{th}(j-A)	36	℃/W

Notes:

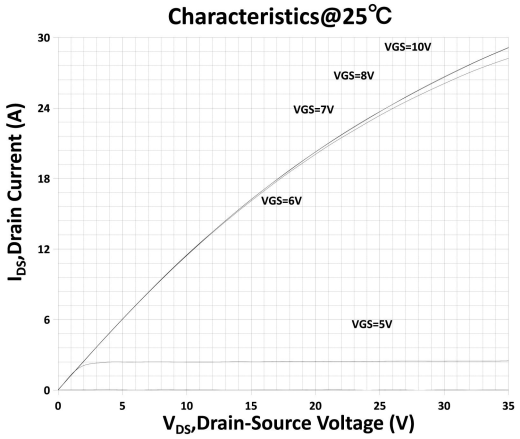
1. Pulse Test：Pulse Width ≤300μs,Duty Cycle≤2%

Electrical Characteristics

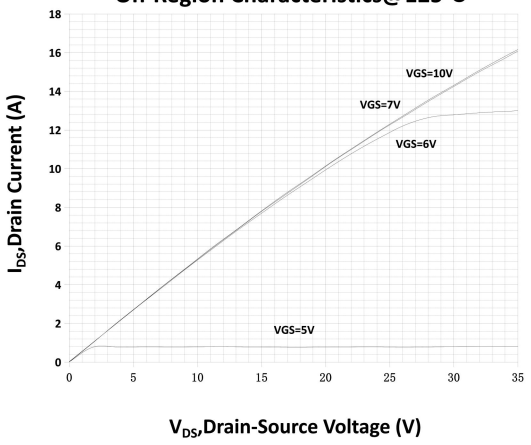
On-Region Characteristics@25℃



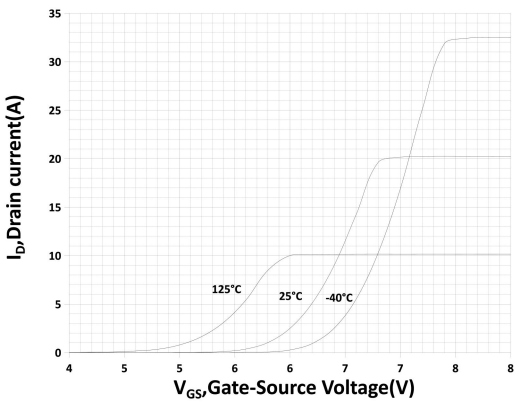
Extended On-Region Characteristics@25℃



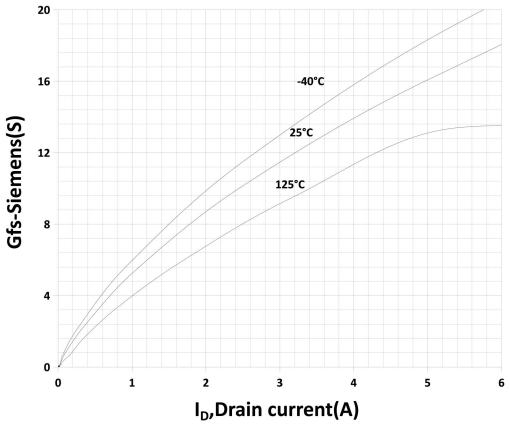
On-Region Characteristics@125℃



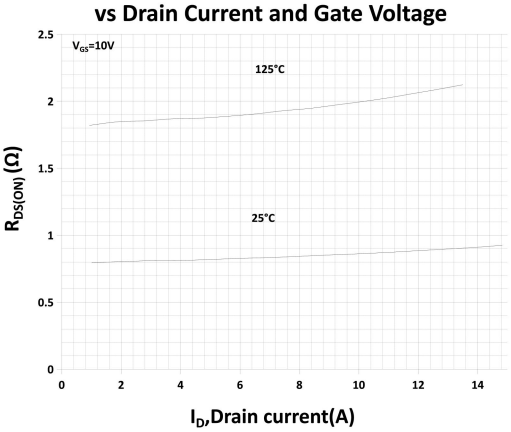
Transfer Characteristics



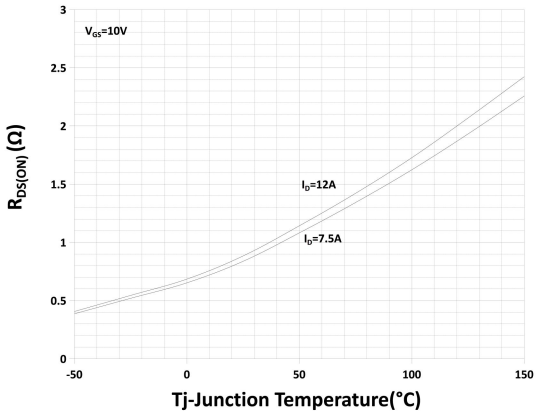
Transconductance



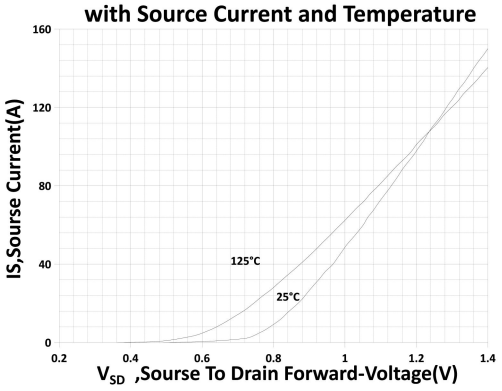
On-Resistance Variation vs Drain Current and Gate Voltage



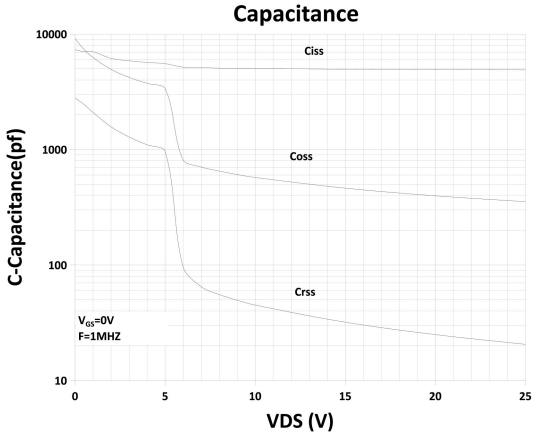
On-Resistance Variation vs Temperature



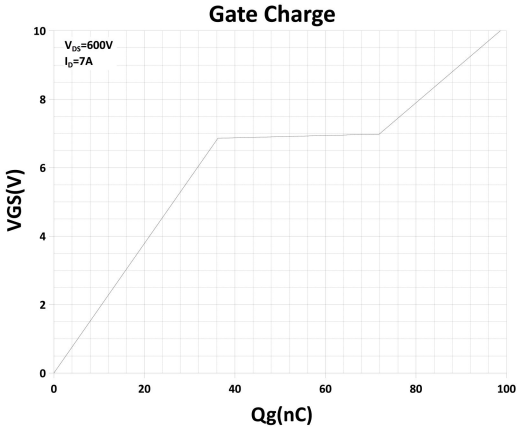
Body Diode Forward Voltage Variation with Source Current and Temperature

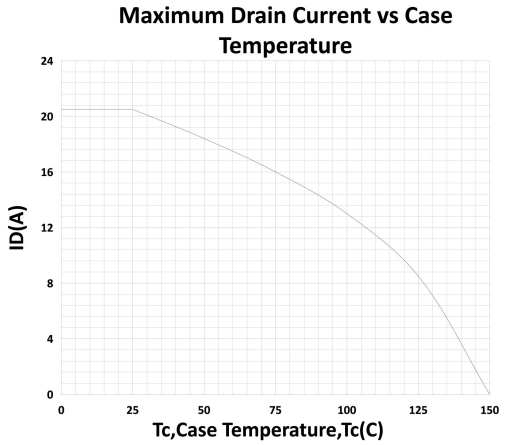


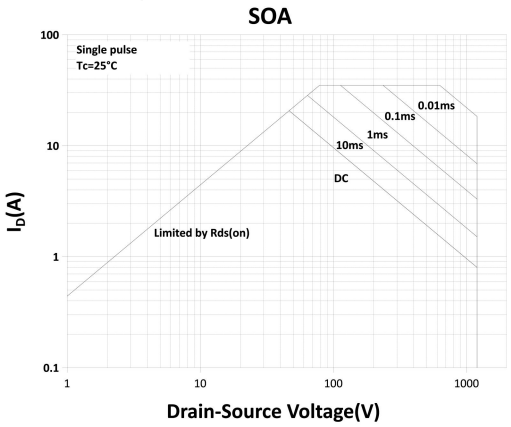
Capacitance

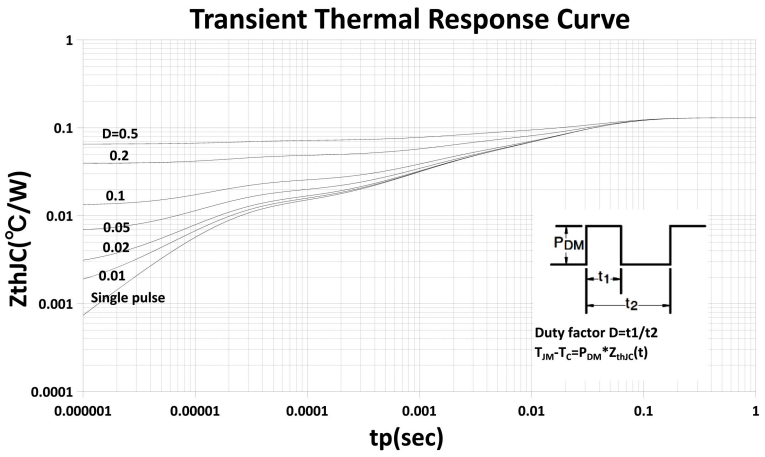


Gate Charge









Package Mechanical DATA