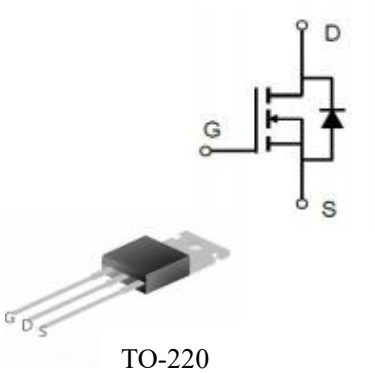
N-Channel SGT MOSFET 85V/120A

Parameter	Value	Unit
VDS	85	V
RDS(on)	4.1	mΩ
ID	120	A



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Package Marking and Ordering Information

Part No.	Package	Packing	Reel Size	Tape Width	SPQ
HMS120N08TX100	TO-220	Tube	N/A	N/A	50pcs
HMS120N08SX100	TO-263	Tape	N/A	N/A	1000pcs

FEATURES

- Uses advanced MOS technology
- Etremely low on-resistance RDS(on)
- Excellent QgxRDS(on) product(FOM)
- Qualified according to JEDEC criteria

APPLICATIONS

- Motor control and drive
- Battery management
- UPS (Uninterrupible Power Supplies)

MAXIMUM RATED VALUES

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	85	V
Continuous Drain Current	ID	-	A
TC = 25°C(Silicon limit)		150	
TC = 25°C(Package limit)		120	
TC = 100°C(Silicon limit)		95	
Pulsed Drain Current (TC = 25°C, tp limited by Tjmax)	ID pulse	480	A
Avalanche Energy, Single Pulse (L=0.5mH, Rg=25Ω)	EAS	196	mJ
Gate-Source Voltage	VGS	±20	V
Power Dissipation TC = 25°C	Ptot	189	W
Operating Junction Temperature	Tj,Tstg	-55 to 150	°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Max. Value	Unit
Thermal Resistance, Junction–Case	RthJC	0.66	°C/W
Thermal Resistance, Junction – Ambient(min. footprint)	RthJA	58	

ELECTRICAL CHARACTERISTICS (at TJ = 25°C unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Static Characteristic							
Drain-Source Breakdown Voltage	BVDSS	VGS=0V , ID=250uA		85	97	-	V
Gate Threshold Voltage	VGS(th)	VDS=VGS , ID=250uA		2	3	4	V
Zero Gate Voltage Drain Current	IDSS	VDS=80V,VGS=0V	TJ=25°C	-	0.05	1	μA
			TJ=125°C	-	-	5	
Gate-Source Leakage Current	IGSS	VDS=0V, VGS= ±20V		-	±10	±100	nA
Drain-Source On-State Resistance	RDS(on)	VGS=10V,ID=50A	TO-220	-	4.1	4.8	mΩ
			TO-263	-	3.8	4.5	
Transconductance	gfs	VDS=5V, ID=40A		-	93	-	S
Dynamic Characteristic							
Input Capacitance	Ciss	VGS=0V, VDS=42.5V, f=1MHz			4027		pF
Output Capacitance	Coss				1207		pF
Reverse Transfer Capacitance	Crss				33		pF
Gate Total Charge	QG	VGS=10V, VDS=42.5V, ID=50A			64		nC
Gate-Source charge	Qgs				19		nC
Gate-Drain charge	Qgd				17		nC
Turn-On DelayTime	td(on)	VGS=10V, VDS=42.5V,ID=10A RG=3.5Ω		-	26	-	ns
Turn-On Rise Time	tr			-	47	-	ns
Turn-Off DelayTime	td(off)			-	54	-	ns
Turn-Off Fall Time	tf			-	28	-	ns
Gate Resistance	RG	VGS=0V, VDS=0V, f=1MHz		-	3.3	-	Ω
Body Diode Characteristic							
Body Diode Forward Voltage	VSD	VGS=0V,ISD=50A		-	0.9	1.4	V
Body Diode Reverse Recovery Time	trr	IS=30A,VGS=0V		-	66	-	ns
Body Diode Reverse Recovery Charge	Qrr	dI/dt=100A/ μs		-	79	-	nC

CHARACTERISTICS DIAGRAMS

Figure1：Output characteristics

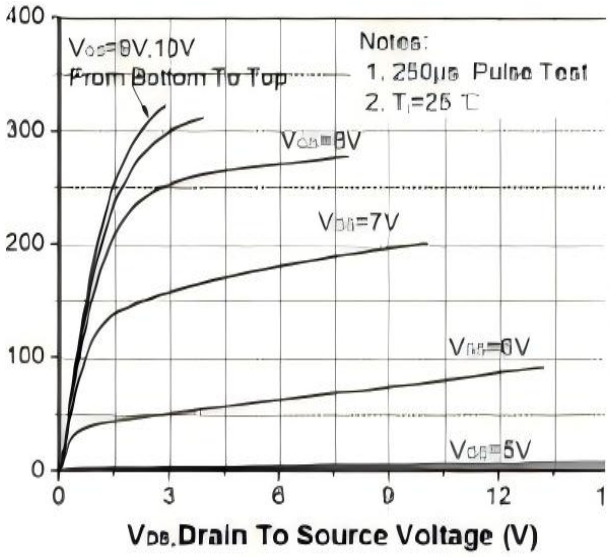


Figure2： Transfer characteristics

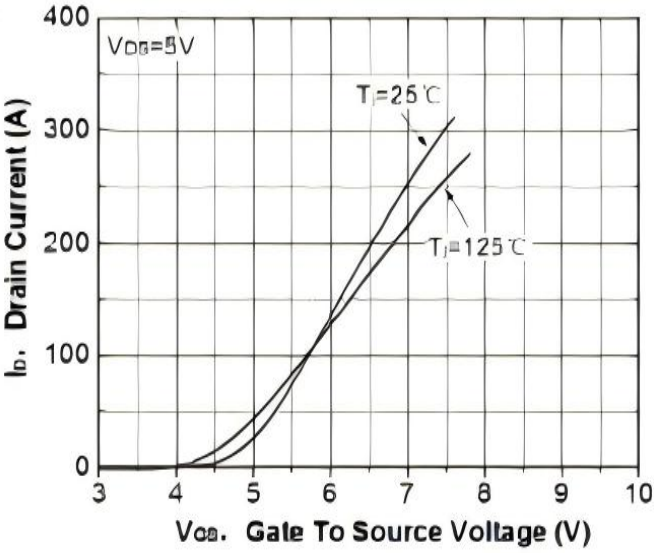


Figure3：Rds(on) vs Drain Current & Gate voltage

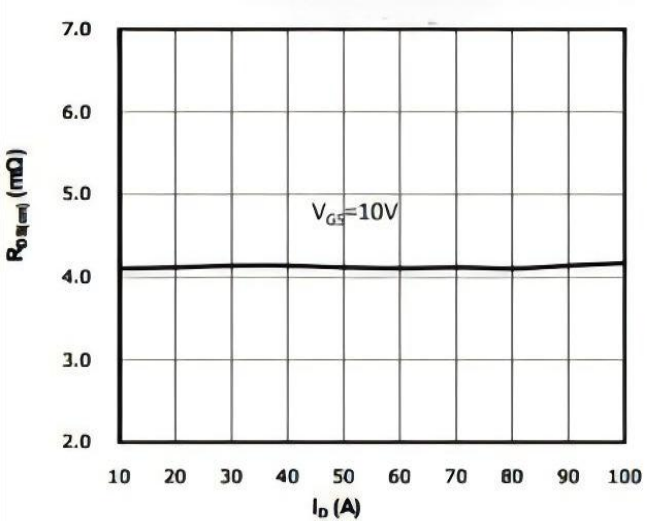


Figure4：Rds(on) vs Gate voltage

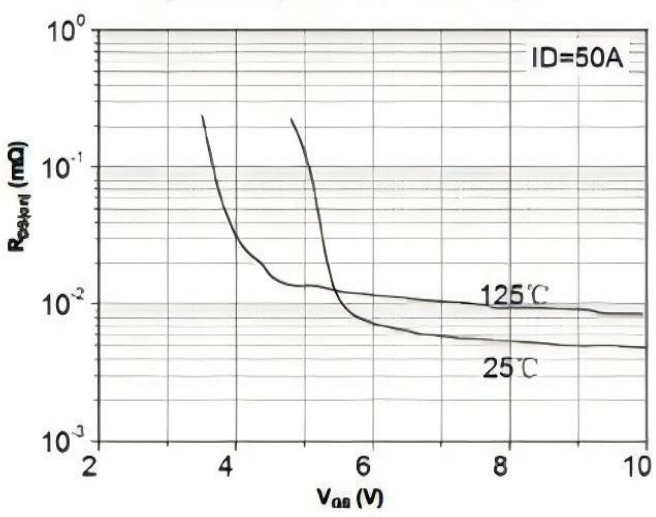


Figure5： Rds(on) vs Temperature

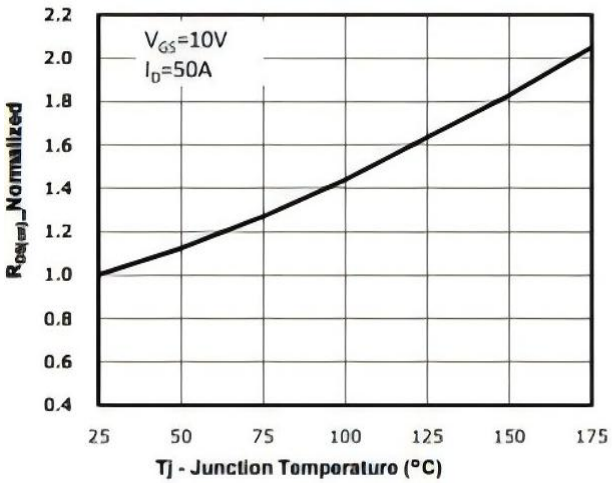


Figure6： Capacitance characteristics

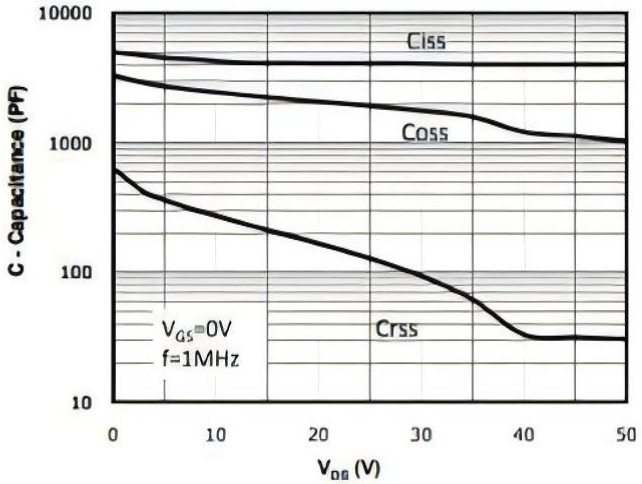


Figure7: Gate charge characteristics

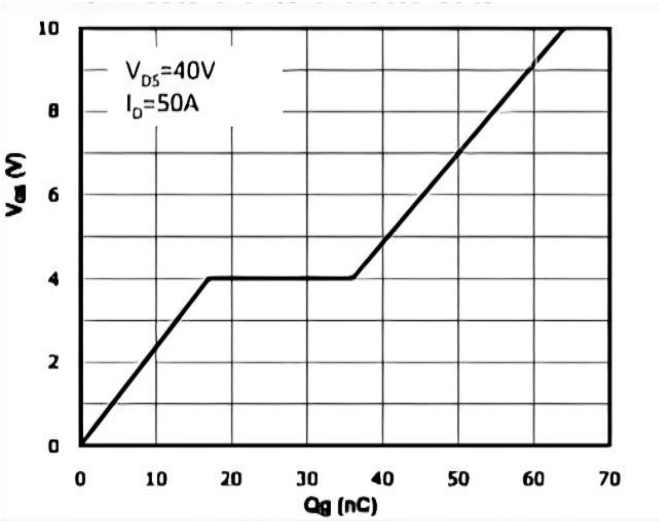


Figure8: Body diode forward characteristics

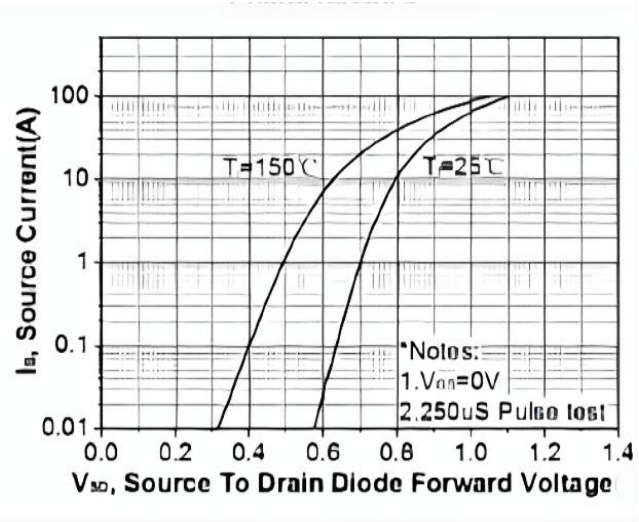


Figure9: Power Dissipation

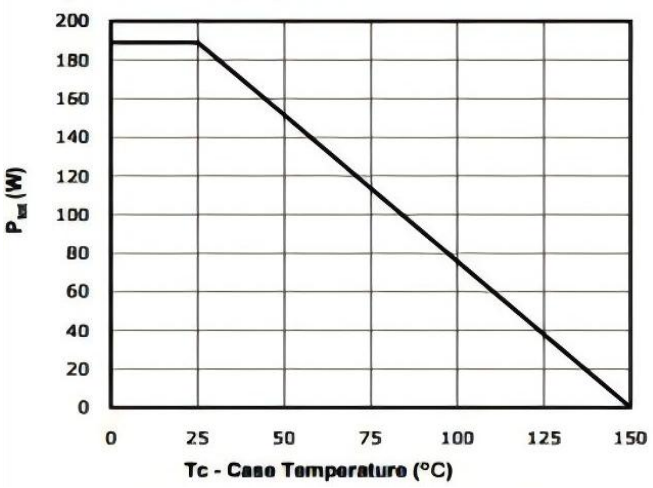


Figure10：Drain current derating

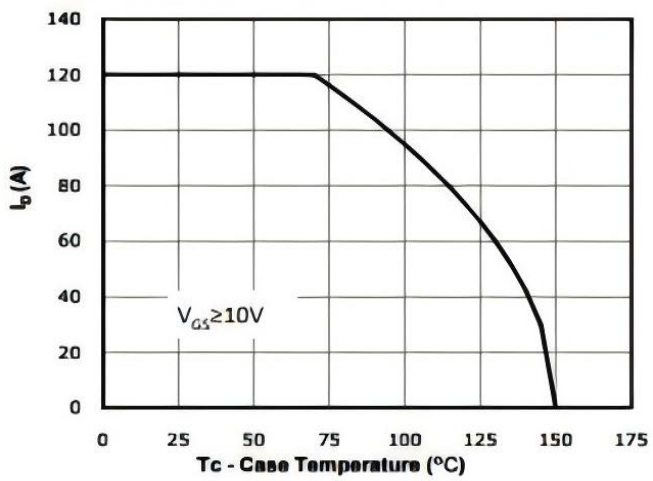


Figure11: Safe operating area

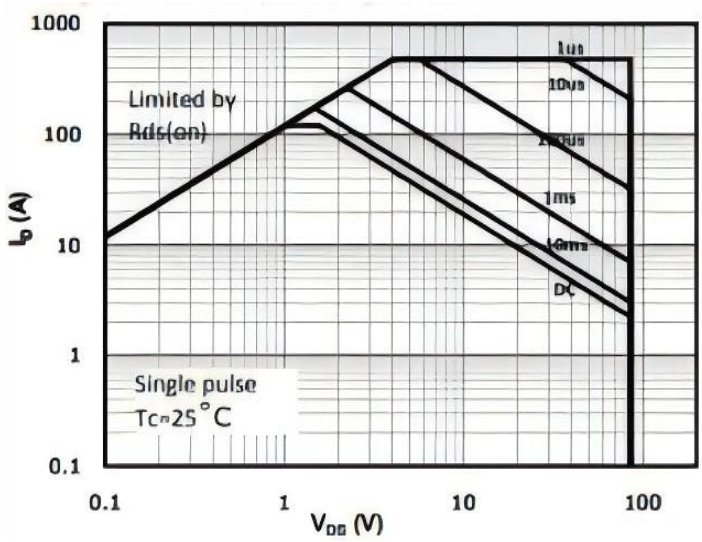
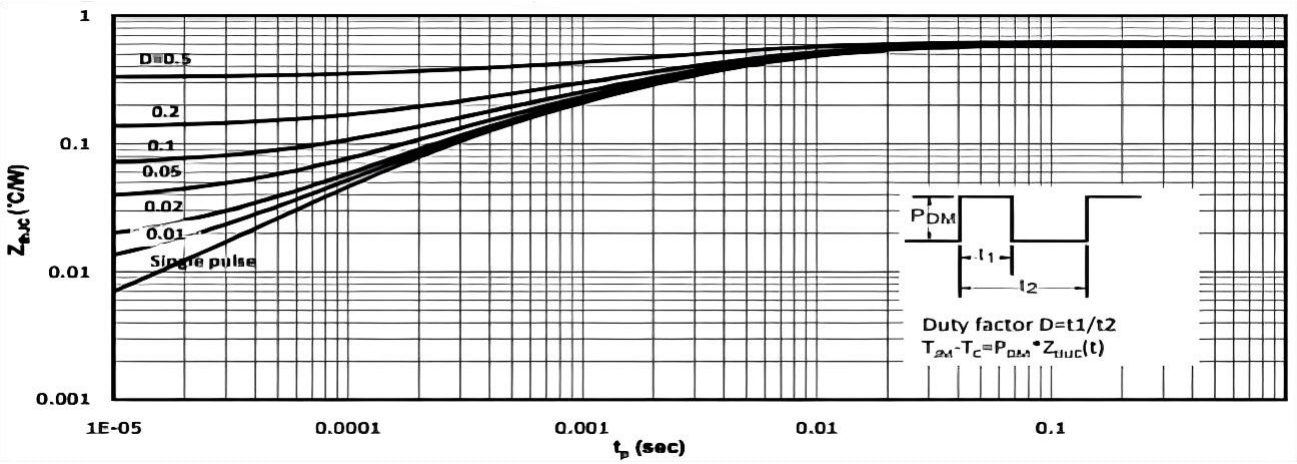


Figure12: Max. Transient thermal impedance



PACKAGE OUTLINE

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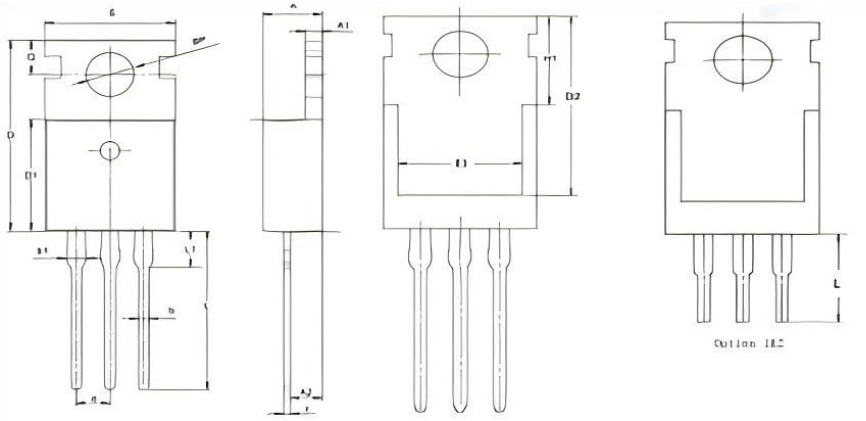
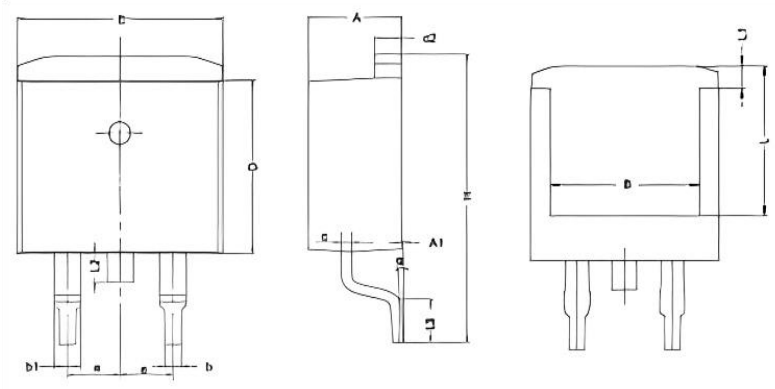


Symbol	Dimensions(Unit: mm)		
	Min	Typ	Max
A	4.30	4.50	4.70
A1	1.25	1.30	1.35
A2	2.25	2.40	2.55
b	0.70	0.80	0.90
b1	1.22	1.27	1.32
c	0.45	0.50	0.55
D	15.50	15.70	15.90
D1	8.90	9.20	9.40
D2	12.90	13.00	13.40
E	9.90	10.00	10.10
E1	7.80	7.95	8.10
e		2.54BSC	
H1	6.40	6.60	6.80
L	12.95	-	13.35
L (Option1)	0.30	0.50	0.70
L (Option2)	7.80	8.00	8.20
L1	-	-	3.95
P	3.50	3.60	3.70
Q	2.70	2.80	3.10

TO-263



Symbol	Dimensions(Unit: mm)		
	Min	Typ	Max
A	4.40	4.55	4.70
A1	0.00	-	0.25
B	7.80	7.95	8.10
b	0.70	0.80	0.90
b1	1.22	1.27	1.32
c	0.45	0.50	0.55
c2	1.25	1.30	1.40
D	9.00	9.20	9.40
E	9.80	-	10.10
e		2.54BSC	
H	15.20	15.50	15.80
L	7.55	7.70	7.85
L1	1.10	1.20	1.30
L2	-	-	1.65
L3	2.30	-	2.70
θ	-	-	8°

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