ShinDengen

P168LG10GNK

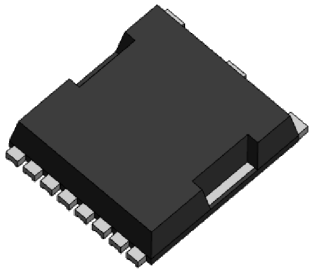
Power MOSFETs
100V, 168A, N-channel

Feature

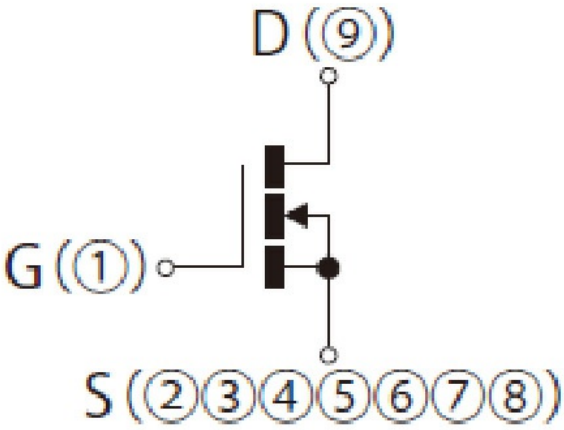
- N-channel
- SMD
- Super Large Current
- Low Ron
- 10V Gate Drive
- Low Capacitance
- Based on AEC-Q101
- Halogen free
- Pb free terminal
- RoHS:Yes

OUTLINE

Package (House Name): LG
Package (JEDEC Code): MO-299B



Equivalent circuit



Absolute Maximum Ratings

Item	Symbol	Conditions	Ratings	Unit
Storage temperature	Tstg		-55 to 175	℃
Channel tempertature	Tch		-55 to 175	℃
Drain-source voltage	V_{DSS}		100	V
Gate-source voltage	V_{GSS}		±20	V
Continuous drain current(DC)	I_D		168	A
Continuous drain current(Peak)	I_{DP}	Pulse width 10μs, Duty=1/100	672	A
Continuous source current(DC)	Is		168	A
Total power dissipation	P_T	With heatsink	365	W
Total power dissipation	P_T	Measured on the 1 inch² glass epoxy substrate pattern area：634.86㎟	3.7	W
Total power dissipation	P_T	Measured on the 1 inch² glass epoxy substrate pattern area：164.16㎟	2.7	W
Single avalanche current	I_{AS}	Starting Tch=25℃ Tch≦150℃	74	A
Single avalanche energy	E_{AS}	Starting Tch=25℃ Tch≦150℃	273	mJ

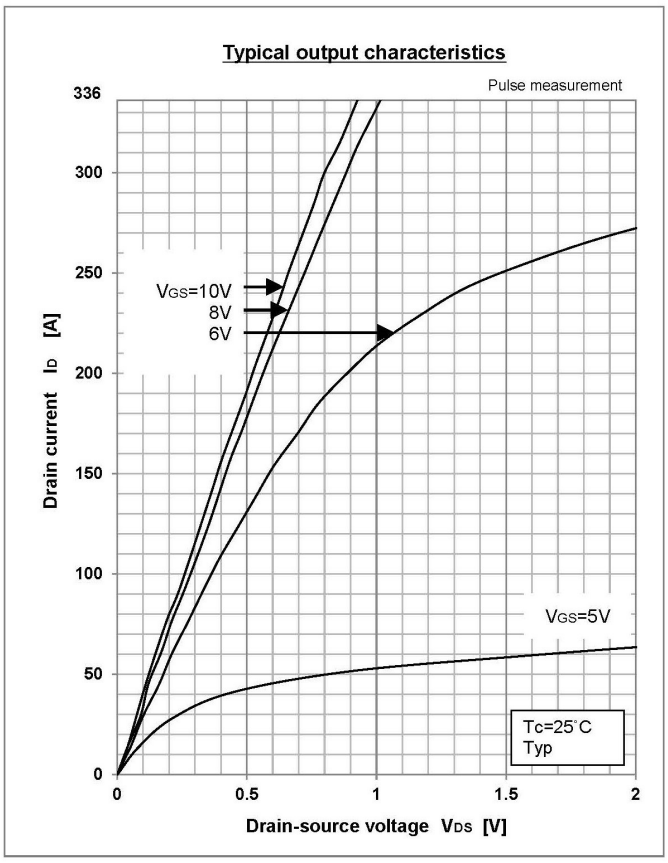
※ ：See the original Specifications

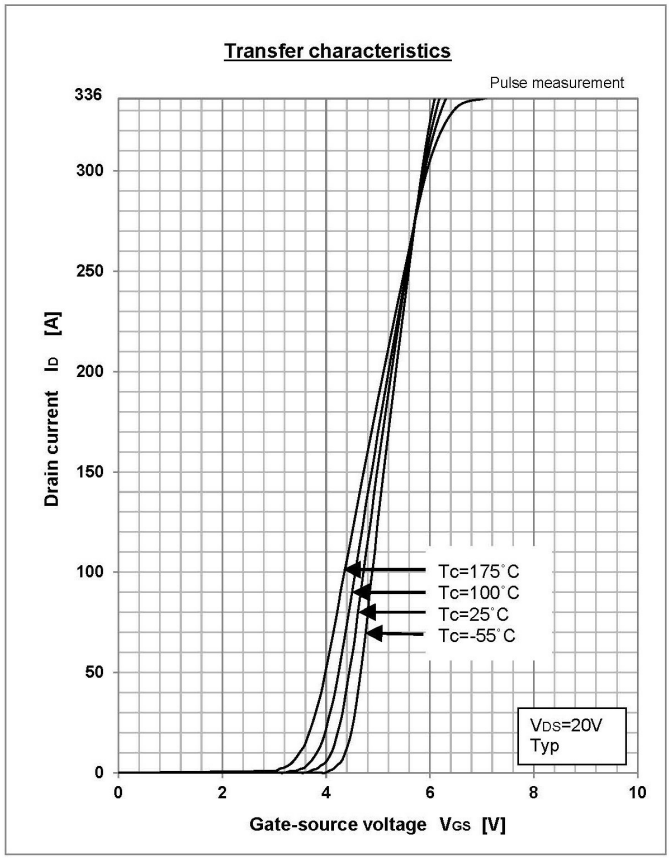
Electrical Characteristics

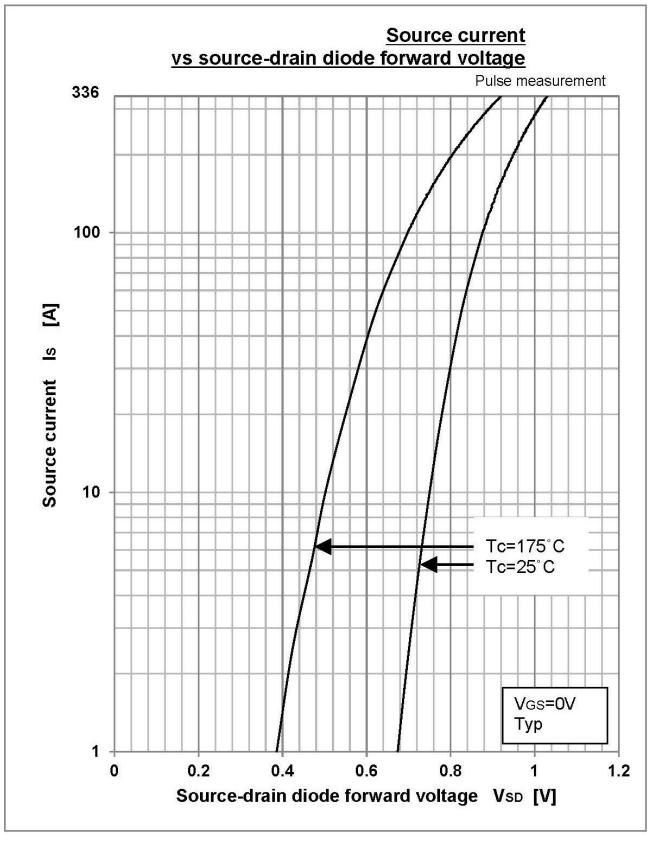
Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	ID=1mA, VGS=0V	100			V
Zero gate voltage drain current	I_{DSS}	VDS=100V, VGS=0V			1	μA
Gate-source leakage current	I_{GSS}	VGS=±20V, VDS=0V			±0.1	μA
Forward transconductance	g_{fs}	ID=42A, VDS=10V	35			S
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=84A, VGS=10V		0.0025	0.0031	Ω
Gate threshold voltage	Vth	ID=1mA, VDS=10V	2	3	4	V
Source-drain diode forward voltage	V_{SD}	IS=84A, VGS=0V			1.2	V
Thermal resistance	Rth(j-c)	Junction to case, With heatsink			0.41	℃/W
Thermal resistance	Rth(j-a)	Junction to ambient, Measured on the 1 inch² glass epoxy substrate pattern area：634.36㎟			40	℃/W
Thermal resistance	Rth(j-a)	Junction to ambient, Measured on the 1 inch² glass epoxy substrate pattern area：164.16㎟			55	℃/W
Total gate charge	Qg	VDS=80V, VGS=10V, ID=84A		96		nC
Gate to source charge	Qgs	VDS=80V, VGS=10V, ID=84A		28		nC
Gate to drain charge	Qgd	VDS=80V, VGS=10V, ID=84A		36		nC
Input capacitance	Ciss	VDS=50V, VGS=0V, f=100kHz		6035		pF
Reverce transfer capacitnce	Crss	VDS=50V, VGS=0V, f=100kHz		31		pF
Output capacitance	Coss	VDS=50V, VGS=0V, f=100kHz		1100		pF
Turn-on delay time	td(on)	ID=42A, RL=1.19Ω, VDS=50V, Rg=0Ω, +VGS=10V, -VGS=0V		16		ns
Rise time	tr	ID=42A, RL=1.19Ω, VDS=50V, Rg=0Ω, +VGS=10V, -VGS=0V		25		ns
Turn-off delay time	td(off)	ID=42A, RL=1.19Ω, VDS=50V, Rg=0Ω, +VGS=10V, -VGS=0V		36		ns
Fall time	tf	ID=42A, RL=1.19Ω, VDS=50V, Rg=0Ω, +VGS=10V, -VGS=0V		10		ns
Diode reverse recovery time	trr	IS=84A, VGS=0V, -di/dt=100A/μs		90		ns
Diode reverse recovery charge	Qrr	IS=84A, VGS=0V, -di/dt=100A/μs		209		nC

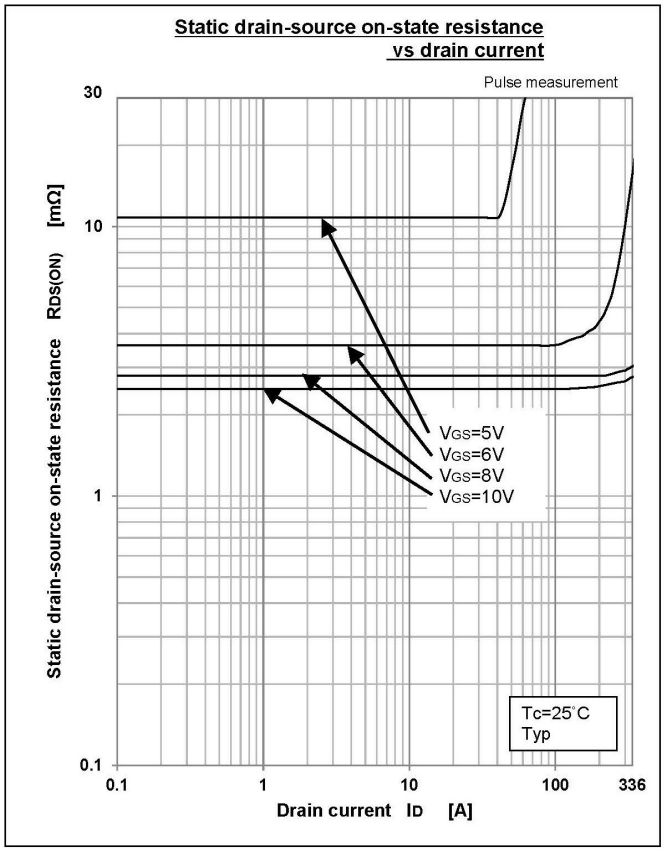
※ ：See the original Specifications

CHARACTERISTIC DIAGRAMS

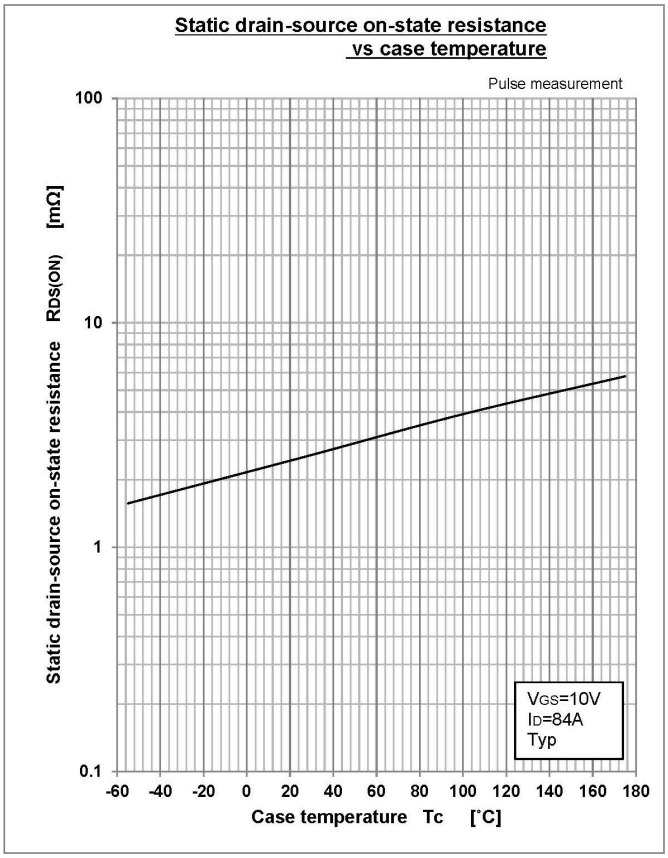




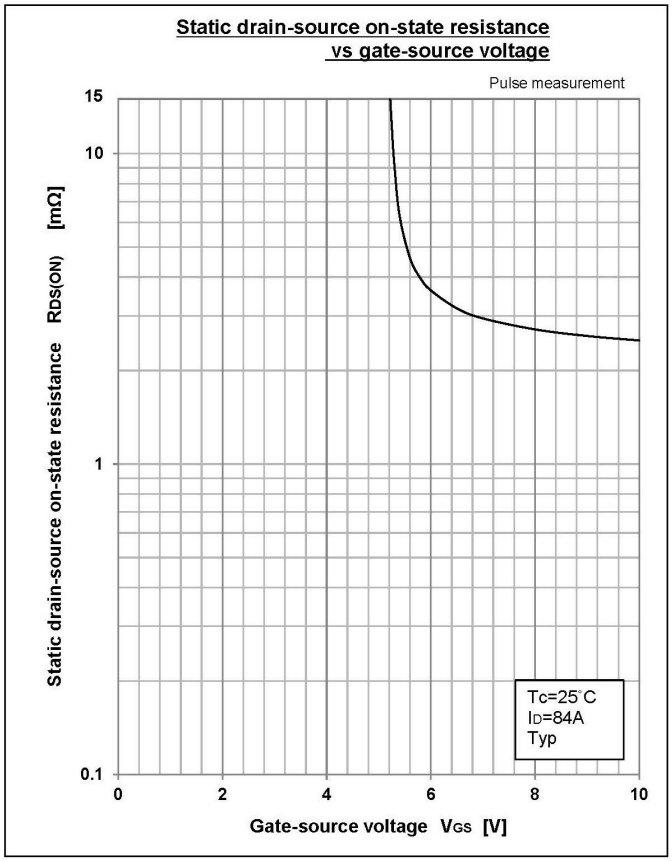




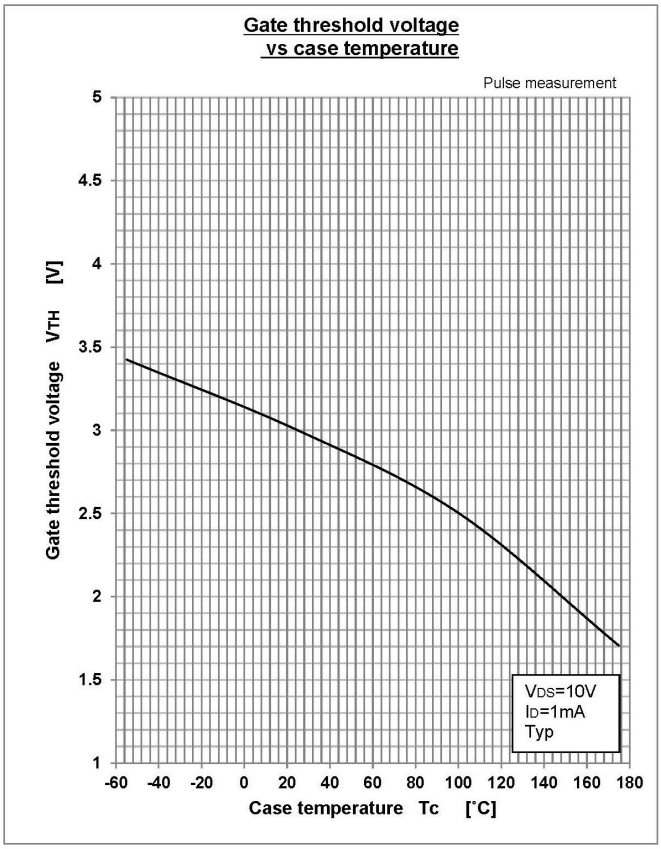
Static drain-source on-state resistance vs case temperature



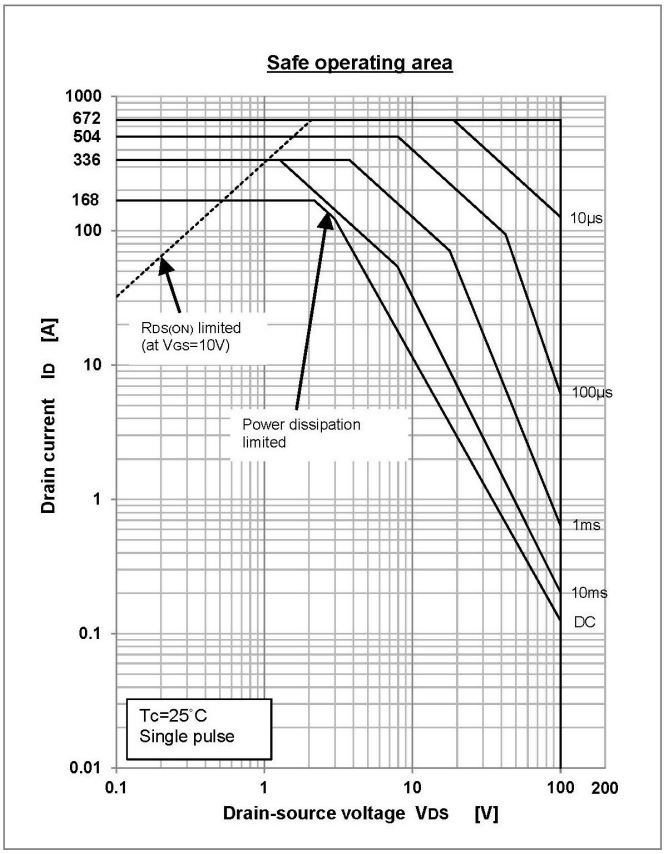
Static drain-source on-state resistance vs gate-source voltage

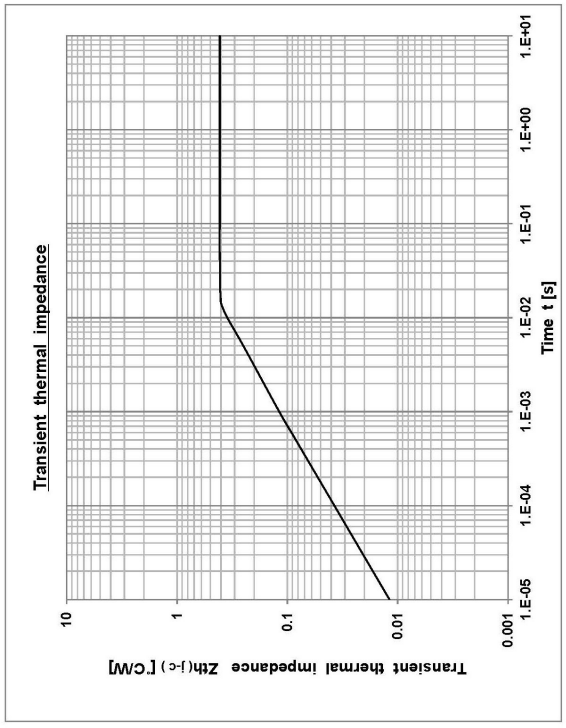


Gate threshold voltage vs case temperature

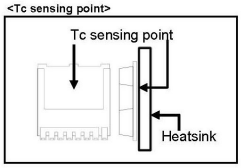


Safe operating area

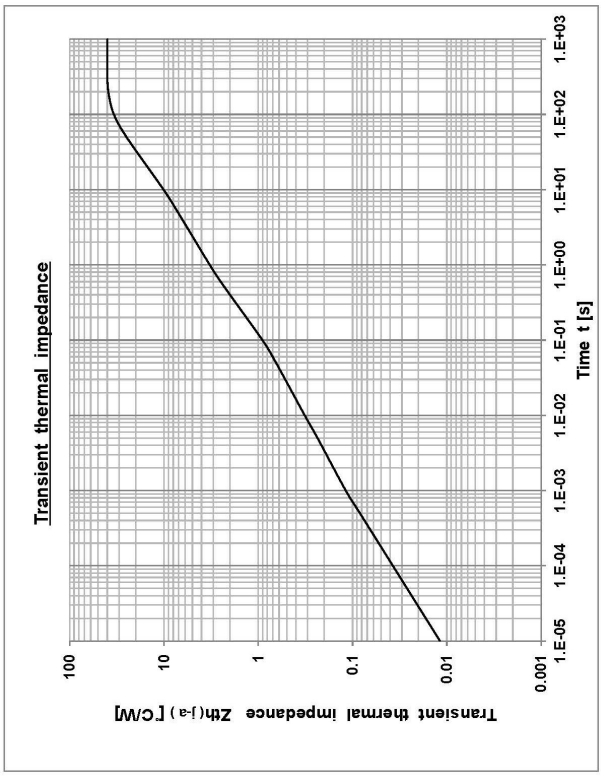




<Tc sensing point>

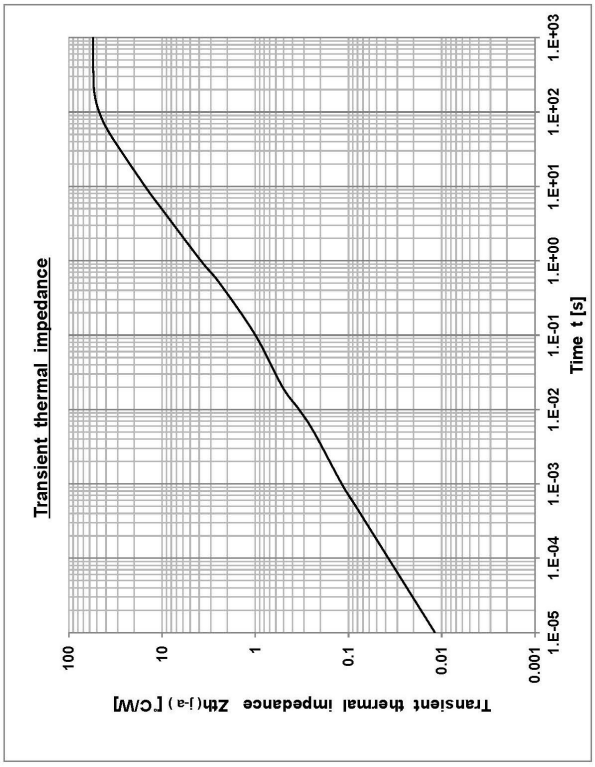


Specification No.



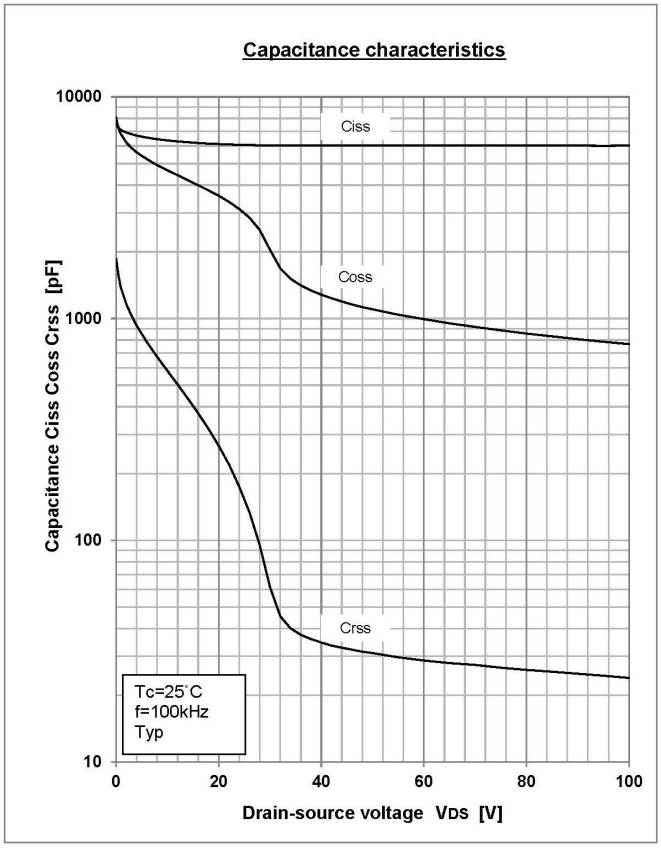
<Substrate detail>

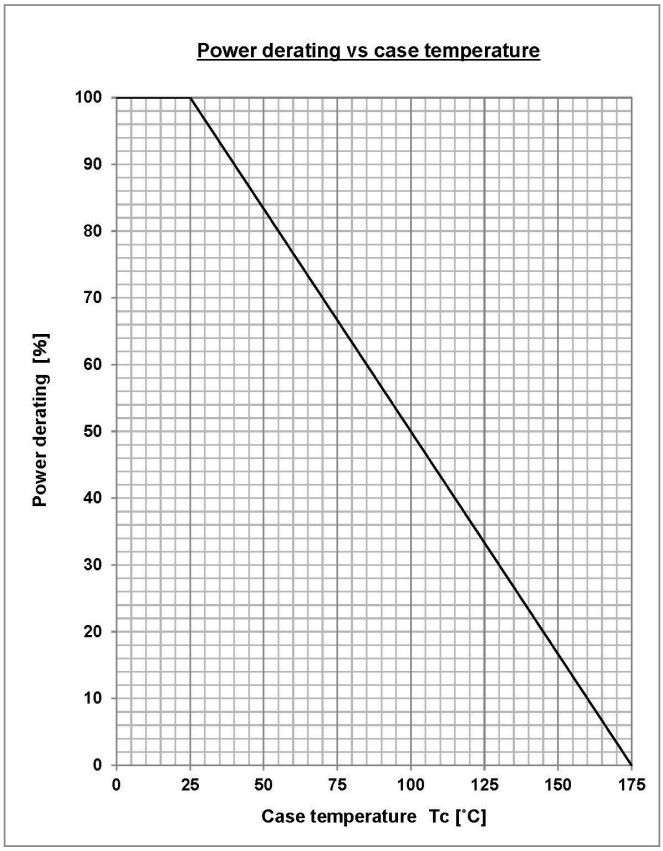
Type	Glass-epoxy
Size	1 inch^2
Thickness	1.6 mm
Conductor thickness	70 µm
Pattern area	634.86 mm^2

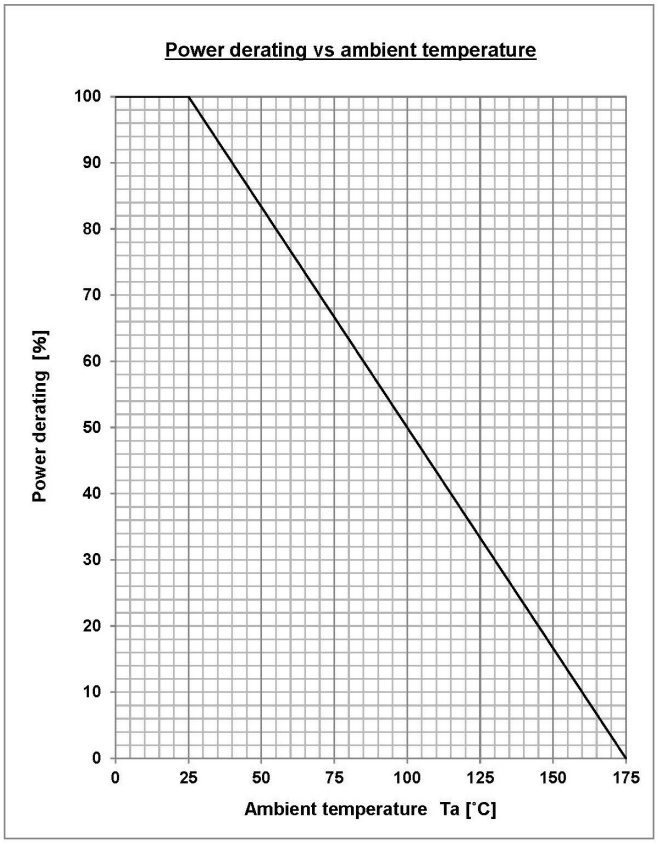


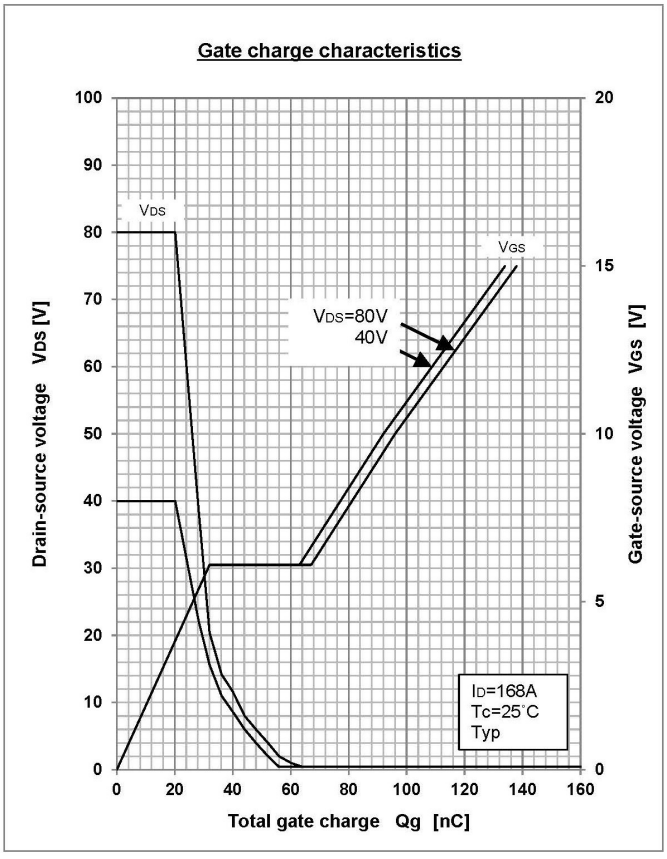
<Substrate detail>

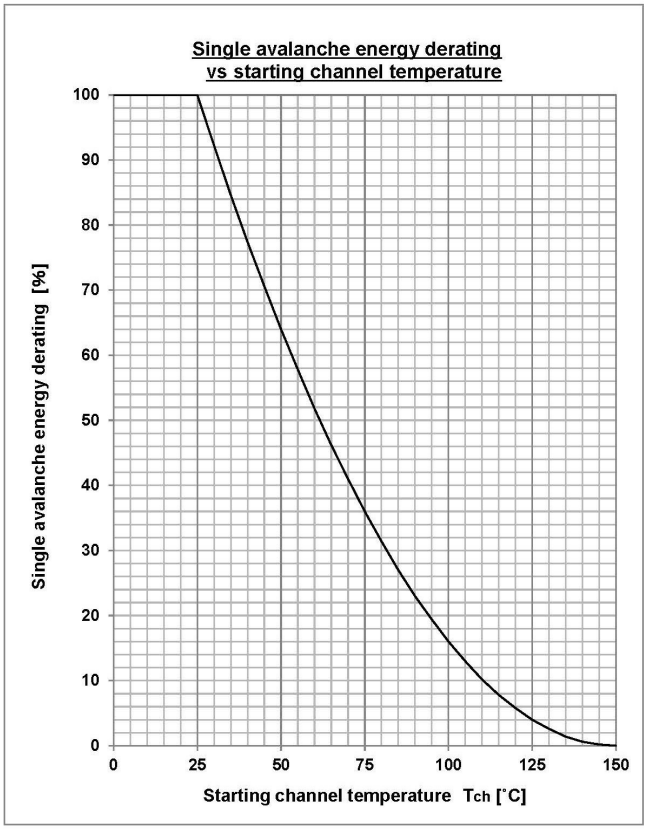
Type	Glass-epoxy
Size	1 inch^2
Thickness	1.6 mm
Conductor thickness	70 µm
Pattern area	164.16 mm^2




Power derating vs case temperature
Power derating [%]
Case temperature Tc [°C]
0
10
20
30
40
50
60
70
80
90
100
0
25
50
75
100
125
150
175


Power derating vs ambient temperature
Power derating [%]
Ambient temperature Ta [°C]
0
10
20
30
40
50
60
70
80
90
100
0
25
50
75
100
125
150
175


Gate charge characteristics
Drain-source voltage VDS [V]
Gate-source voltage VGS [V]
Total gate charge Qg [nC]
VDS
VGS
VDS=80V
40V
ID=168A
Tc=25°C
Typ
0
10
20
30
40
50
60
70
80
90
100
0
5
10
15
20
0
20
40
60
80
100
120
140
160

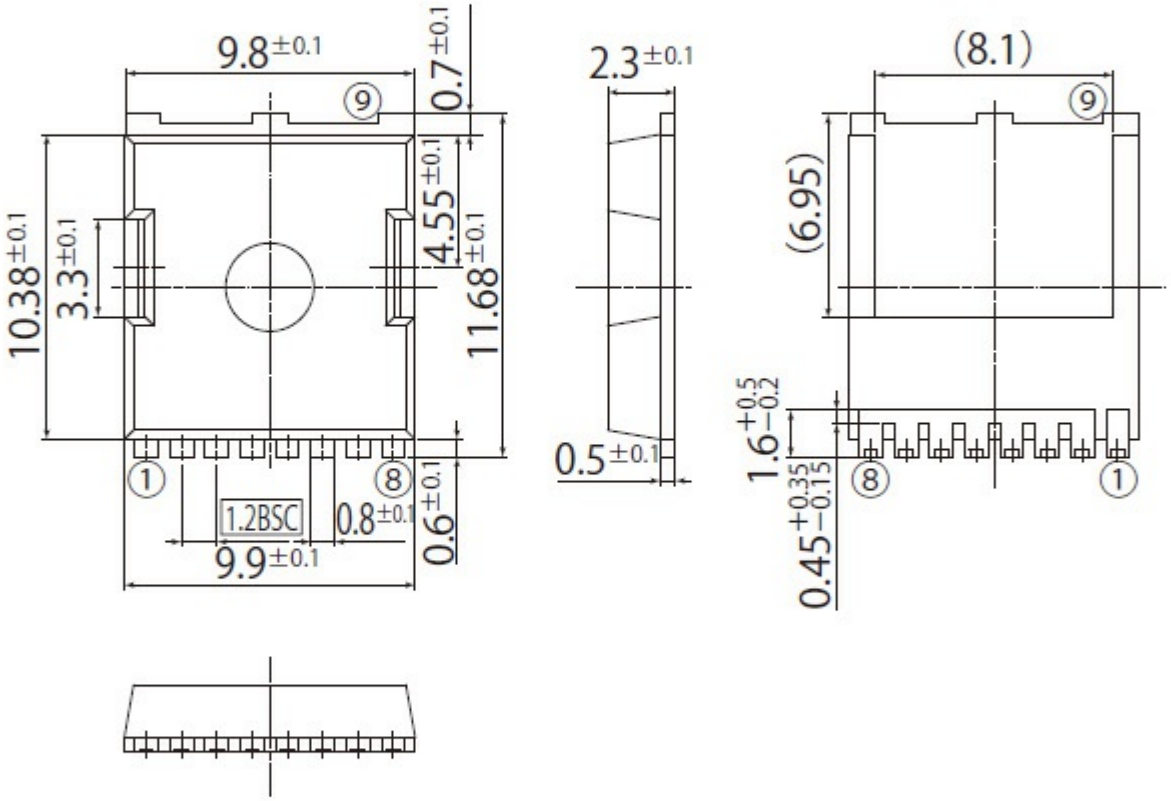

Single avalanche energy derating
vs starting channel temperature
Single avalanche energy derating [%]
Starting channel temperature Tch [°C]
0
10
20
30
40
50
60
70
80
90
100
0
25
50
75
100
125
150

Outline Dimensions

unit:mm

G9

JEDEC Code	MO-299B
JEITA Code	–
House Name	LG(TOLL)



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