# P25LF12SNK

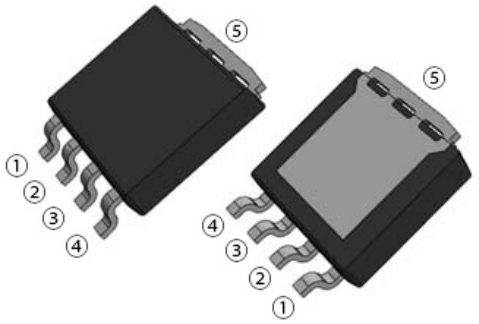
## Power MOSFETs
## 120V, 25A, N-channel

### Feature

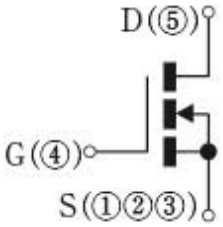
- N-channel
- Small SMD
- Large Current
- Low Ron
- 10V Gate Drive
- Low Capacitance
- Based on AEC-Q101
- Halogen free
- Pb free terminal
- RoHS:Yes

### OUTLINE

**Package (House Name):** LF
**Package (JEDEC Code):** MO-235B similar




### Equivalent circuit




### Absolute Maximum Ratings (unless otherwise specified : Tc=25°C)

| Item | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Storage temperature | Tstg | | -55 to 175 | ℃ |
| Channel tempertature | Tch | | -55 to 175 | ℃ |
| Drain-source voltage | $V_{DSS}$ | | 120 | V |
| Gate-source voltage | $V_{GSS}$ | | ±20 | V |
| Continuous drain current(DC) | $I_D$ | | 25 | A |
| Continuous drain current(Peak) | $I_{DP}$ | Pulse width 10μs, duty=1/100 | 75 | A |
| Total power dissipation | $P_T$ | | 168 | W |
| Single avalanche current | $I_{AS}$ | Starting Tch=25°C Tch≦150°C | 22 | A |
| Single avalanche energy | $E_{AS}$ | Starting Tch=25°C Tch≦150°C | 52 | mJ |

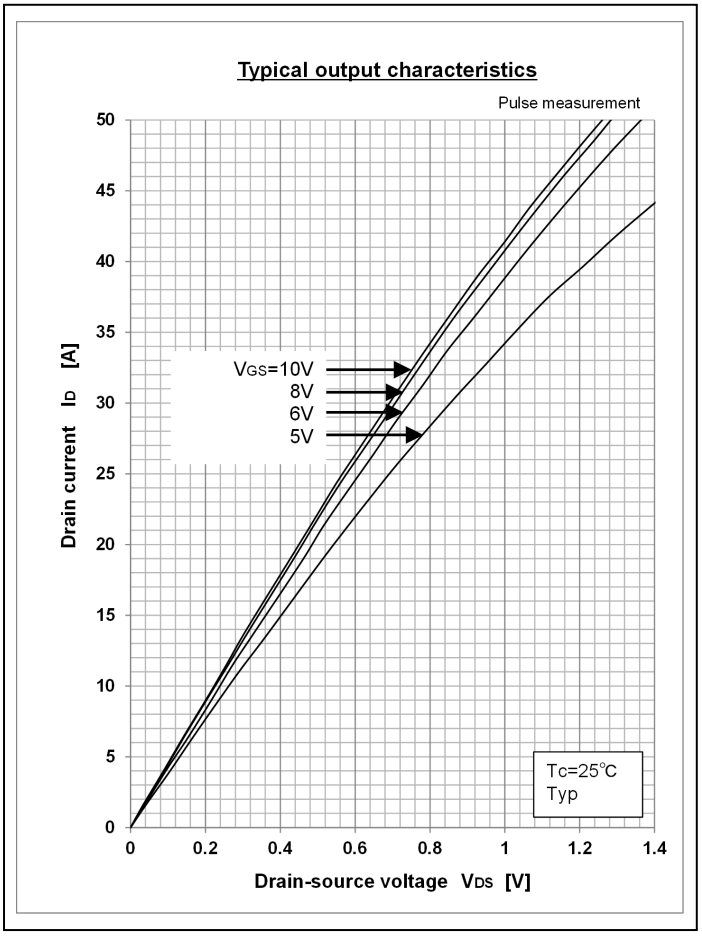
※ :See the original Specifications

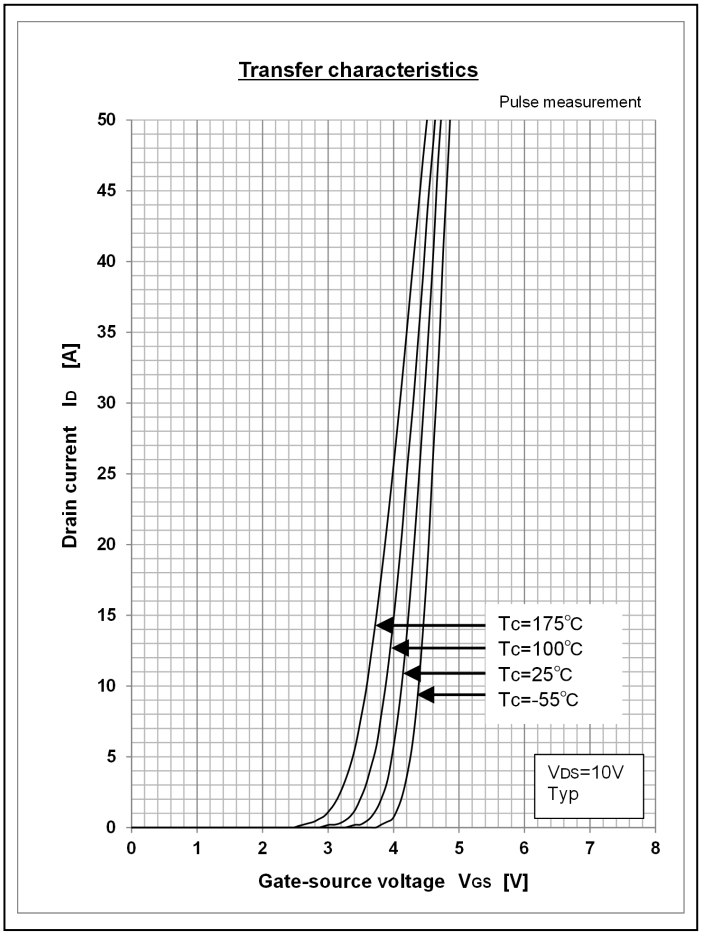
## Electrical Characteristics (unless otherwise specified : Tc=25°C)

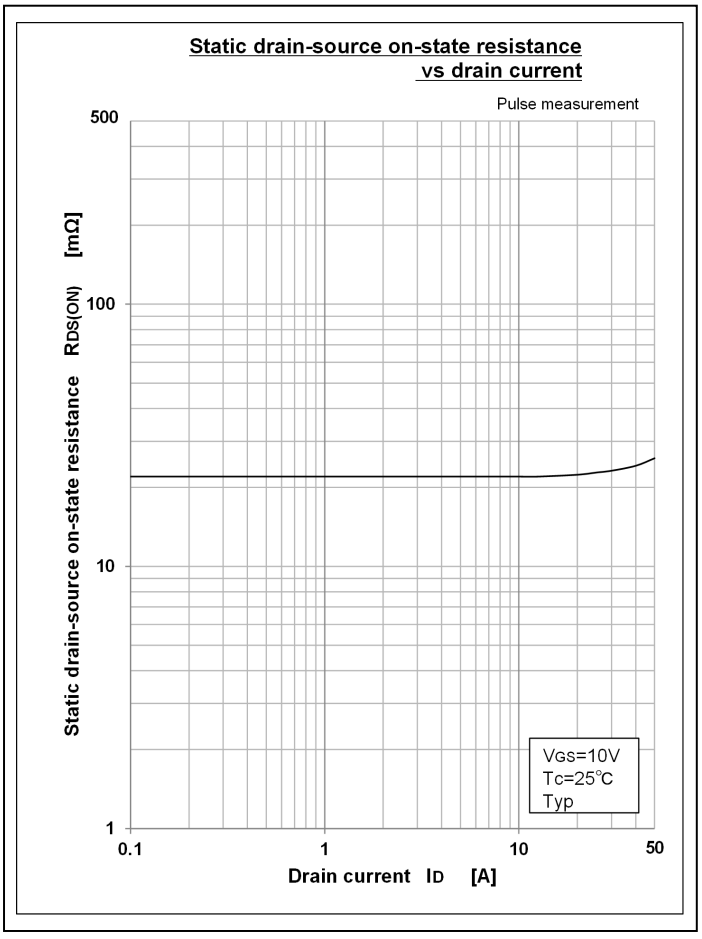
| Item | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | MIN | TYP | MAX | |
| Drain-Source breakdown voltage | $V_{(BR)DSS}$ | ID=1mA, VGS=0V | 120 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | VDS=120V, VGS=0V | | | 1 | μA |
| Gate-source leakage current | $I_{GSS}$ | VGS=±20V, VDS=0V | | | ±0.1 | μA |
| Forward transconductance | $g_{fs}$ | ID=12.5A, VDS=10V | 10 | | | S |
| Static drain-source on-state resistance | $R_{DS(ON)}$ | ID=12.5A, VGS=10V | | 0.021 | 0.027 | Ω |
| Gate threshold voltage | Vth | ID=1mA, VDS=10V | 2 | 3 | 4 | V |
| Source-drain diode forward voltage | $V_{SD}$ | IS=25A, VGS=0V | | | 1.5 | V |
| Thermal resistance | Rth(j-c) | Junction to case, with heatsink | | | 0.89 | °C/W |
| Total gate charge | Qg | VDD=96V, VGS=10V, ID=25A | | 48 | | nC |
| Gate to source charge | Qgs | VDD=96V, VGS=10V, ID=25A | | 12.5 | | nC |
| Gate to drain charge | Qgd | VDD=96V, VGS=10V, ID=25A | | 15 | | nC |
| Input capacitance | Ciss | VDS=25V, VGS=0V, f=1MHz | | 2430 | | pF |
| Reverce transfer capacitnce | Crss | VDS=25V, VGS=0V, f=1MHz | | 92 | | pF |
| Output capacitance | Coss | VDS=25V, VGS=0V, f=1MHz | | 198 | | pF |
| Turn-on delay time | td(on) | ID=12.5A, RL=4.8Ω, VDD=60V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V | | 5.5 | | ns |
| Rise time | tr | ID=12.5A, RL=4.8Ω, VDD=60V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V | | 8 | | ns |
| Turn-off delay time | td(off) | ID=12.5A, RL=4.8Ω, VDD=60V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V | | 31 | | ns |
| Fall time | tf | ID=12.5A, RL=4.8Ω, VDD=60V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V | | 11 | | ns |
| Diode reverse recovery time | trr | IF=25A, VGS=0V, di/dt=100A/μs | | 59 | | ns |
| Diode reverse recovery charge | Qrr | IF=25A, VGS=0V, di/dt=100A/μs | | 132 | | nC |

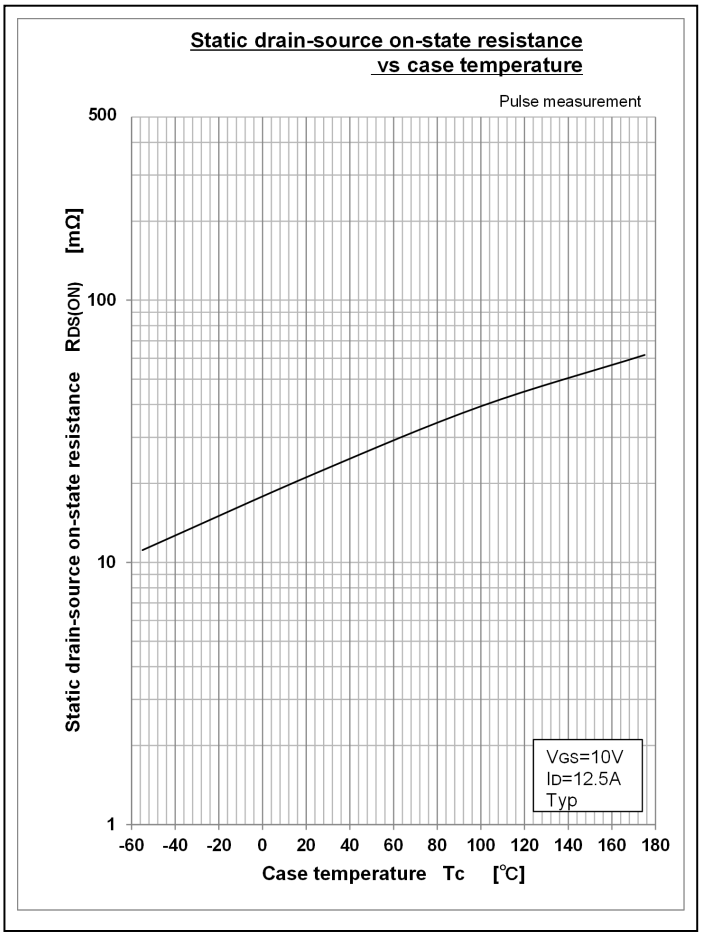
※ ：See the original Specifications

## CHARACTERISTIC DIAGRAMS

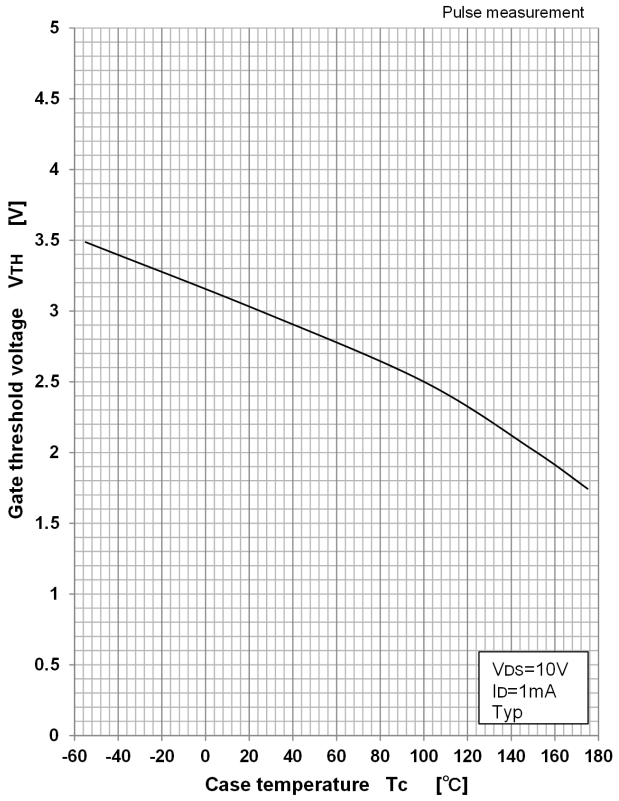


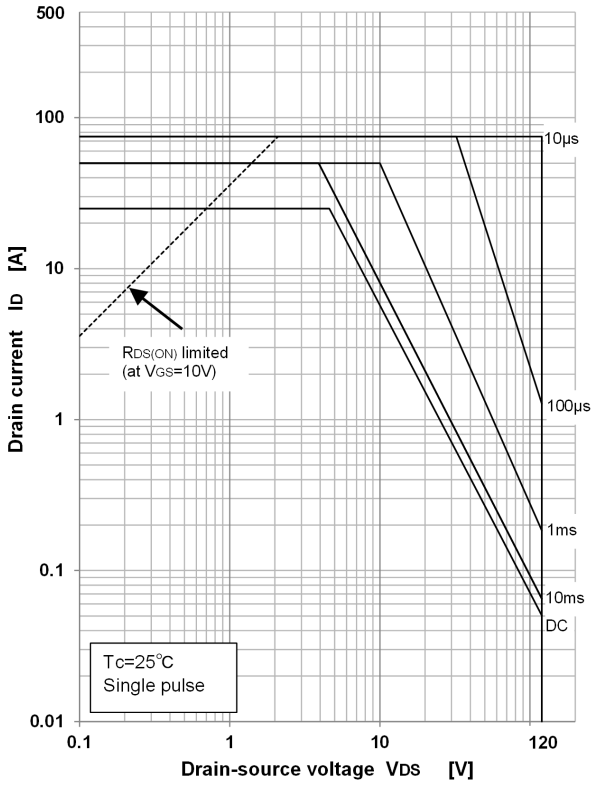



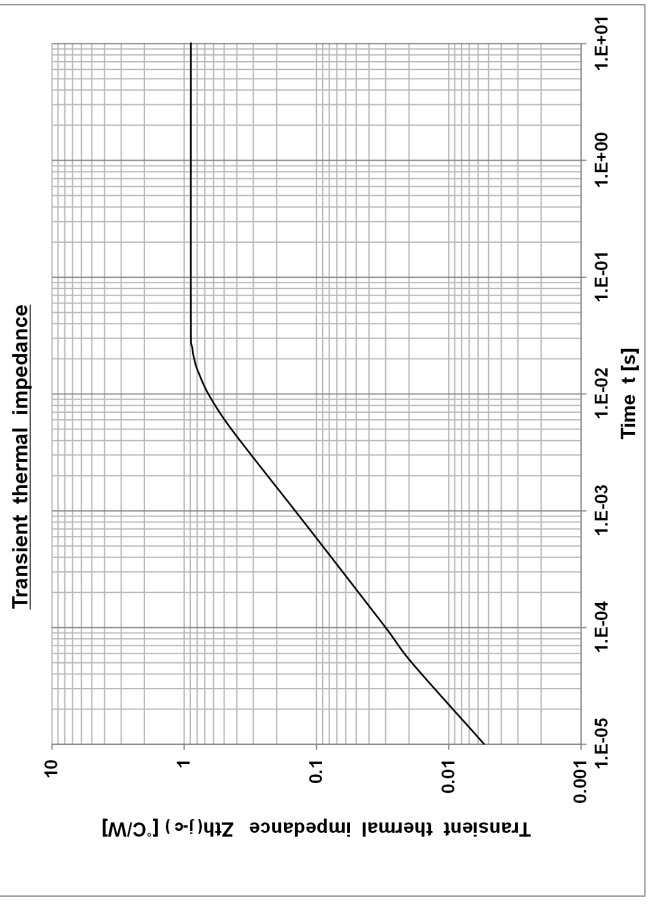
## Gate threshold voltage vs case temperature



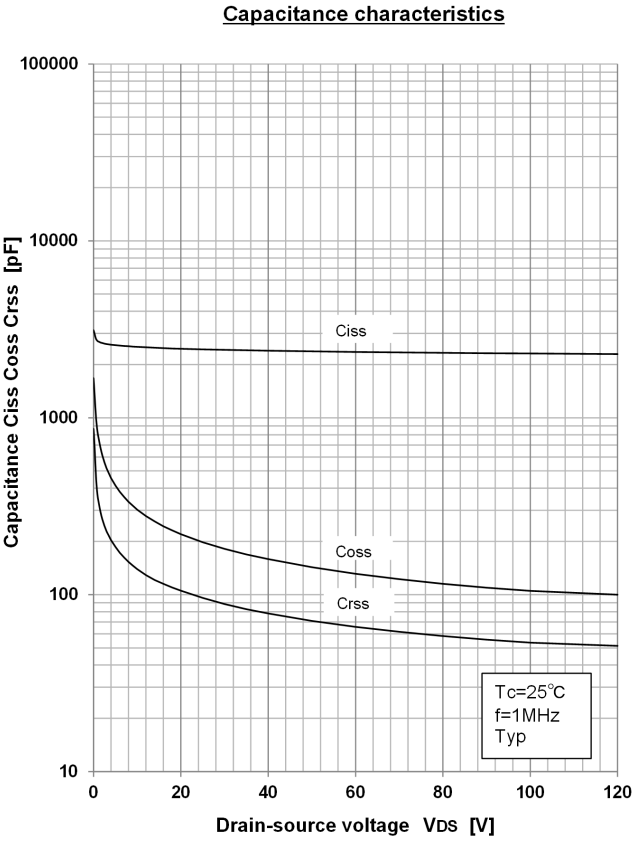

## Safe operating area



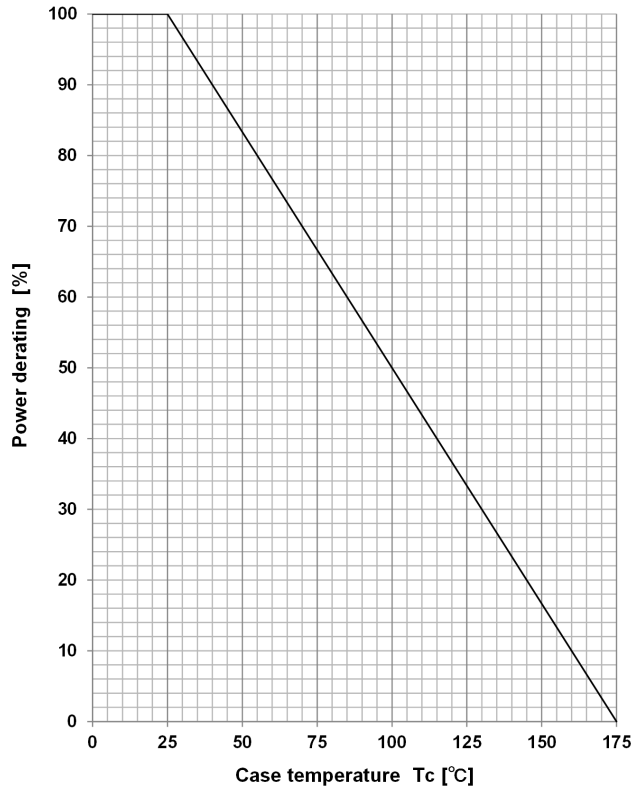

## Transient thermal impedance



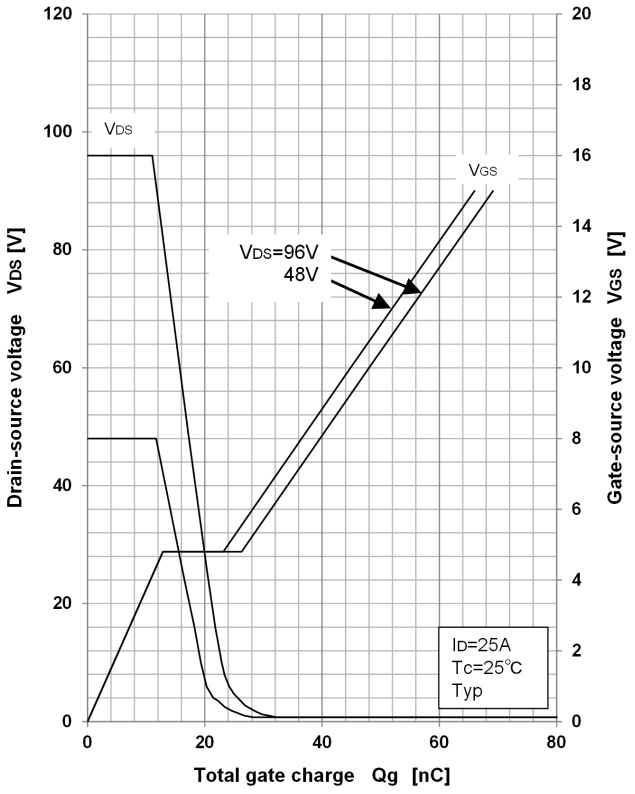

## Capacitance characteristics



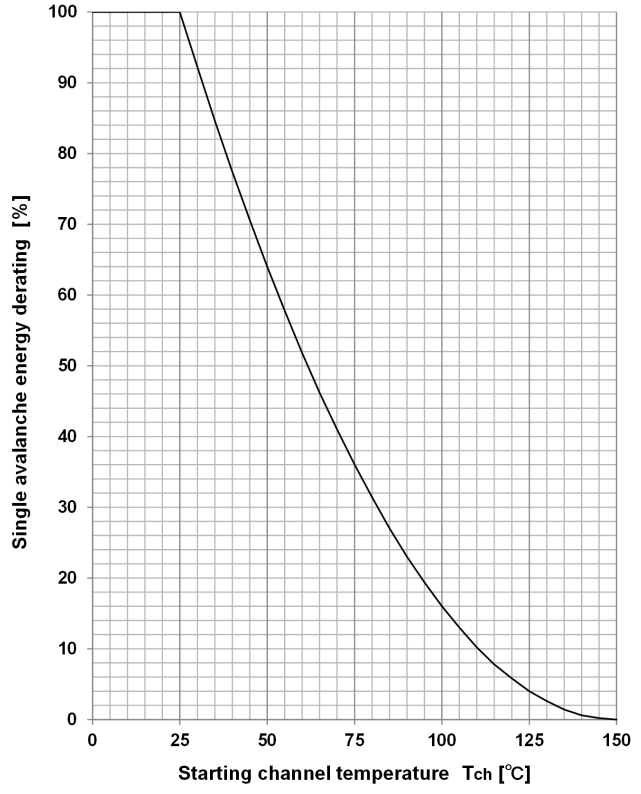
**Power derating vs case temperature**




**Gate charge characteristics**




**Single avalanche energy derating vs starting channel temperature**

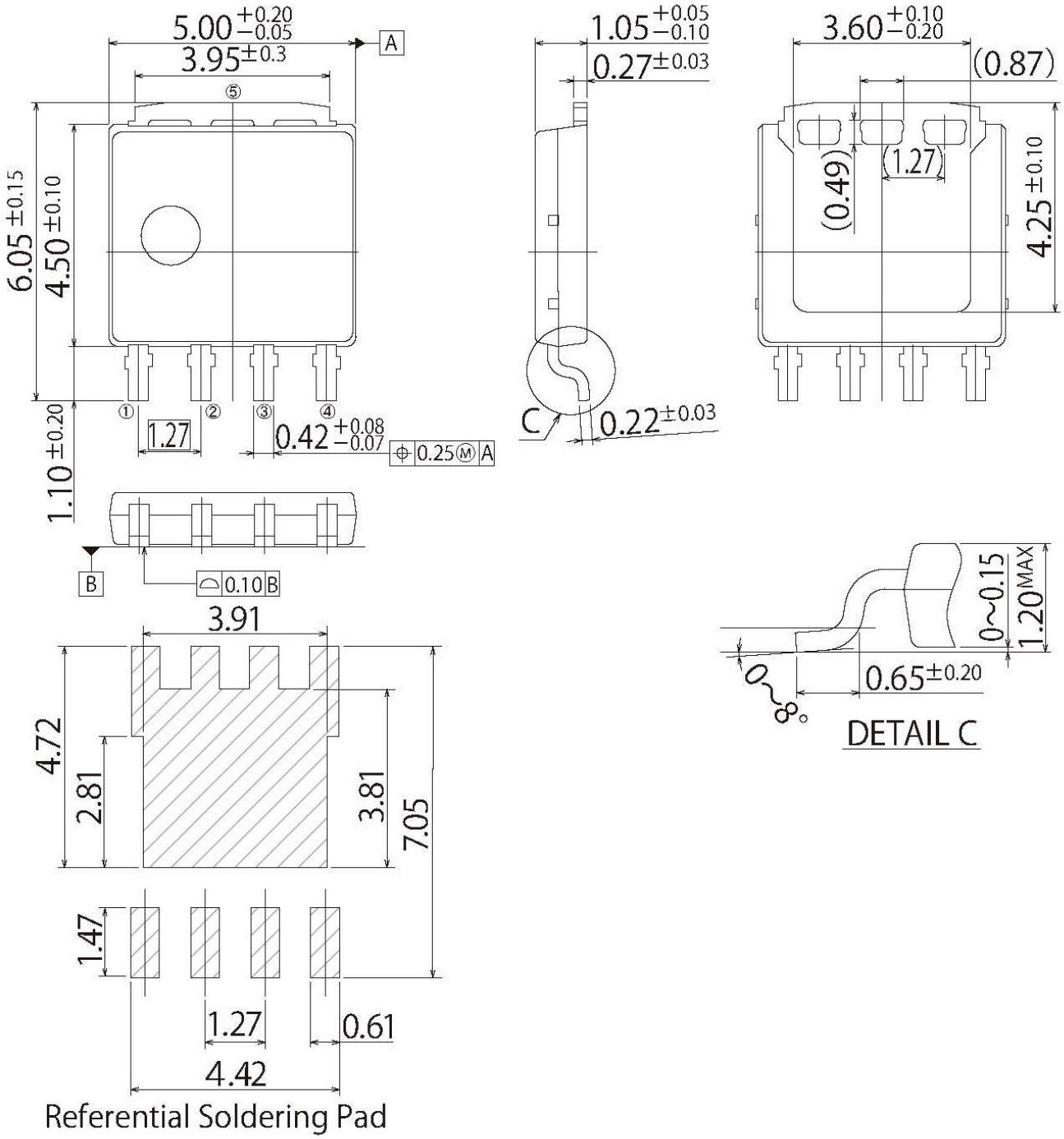


## Outline Dimensions

unit:mm

G7

| | |
|---|---|
| JEDEC Code | MO-235B similar |
| JEITA Code | – |
| House Name | LF |



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