

P38LF6QLK

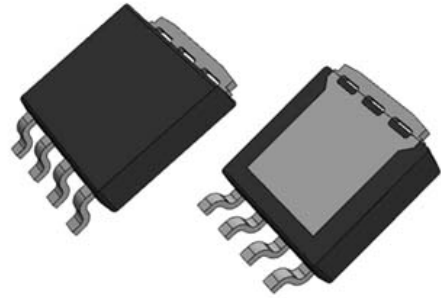
Power MOSFETs
60V, 38A, N-channel

Feature

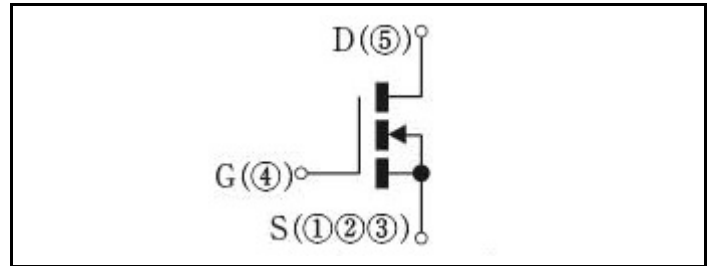
- N-channel
- Small SMD
- Large Current
- Low Ron
- 4.5V Gate Drive
- Low Capacitance
- Based on AEC-Q101
- Halogen free
- Pb free terminal
- RoHS:Yes

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	°C
Channel temperature	Tch		-55 to 175	°C
Drain-source voltage	V _{DSS}		60	V
Gate-source voltage	V _{GSS}		±20	V
Continuous drain current(DC)	I _D		38	A
Continuous drain current(Peak)	I _{DP}	Pulse width 10µs, duty=1/100	114	A
Total power dissipation	P _T		123	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	57	mJ

* : See the original Specifications

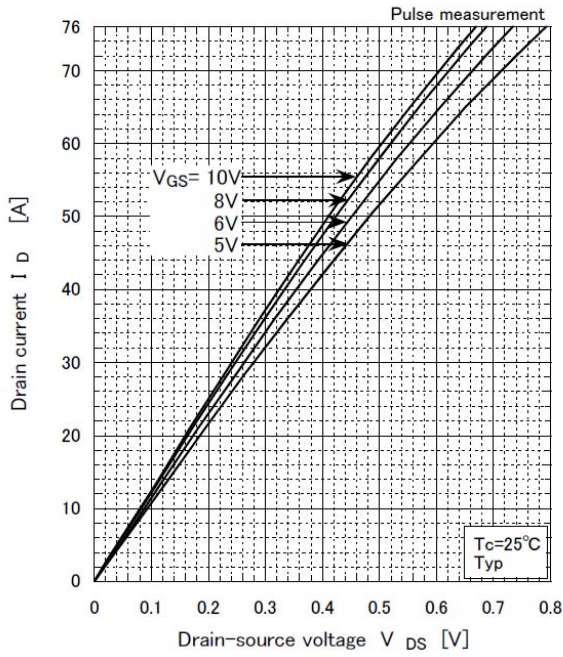
Electrical Characteristics (unless otherwise specified : Tc=25°C)

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	ID=1mA, VGS=0V	60			V
Zero gate voltage drain current	I_{DSS}	VDS=60V, VGS=0V			1	μA
Gate-source leakage current	I_{GSS}	VGS=±20V, VDS=0V			±0.1	μA
Forward transconductance	g_{fs}	ID=19A, VDS=10V	12			S
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=19A, VGS=10V		0.0079	0.0099	Ω
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=19A, VGS=4.5V		0.0097	0.0122	Ω
Gate threshold voltage	V_{th}	ID=1mA, VDS=10V	1.5	2	2.5	V
Source-drain diode forward voltage	V_{SD}	IS=38A, VGS=0V			1.5	V
Thermal resistance	$R_{th(j-c)}$	Junction to case, with heatsink			1.21	°C/W
Total gate charge	Q_g	VDD=48V, VGS=10V, ID=38A		49		nC
Gate to source charge	Q_{gs}	VDD=48V, VGS=10V, ID=38A		9.5		nC
Gate to drain charge	Q_{gd}	VDD=48V, VGS=10V, ID=38A		12		nC
Input capacitance	C_{iss}	VDS=25V, VGS=0V, f=1MHz		2340		pF
Reverse transfer capacitance	C_{rss}	VDS=25V, VGS=0V, f=1MHz		105		pF
Output capacitance	C_{oss}	VDS=25V, VGS=0V, f=1MHz		205		pF
Turn-on delay time	$t_{d(on)}$	ID=19A, RL=1.5Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		4.5		ns
Rise time	t_r	ID=19A, RL=1.5Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		6		ns
Turn-off delay time	$t_{d(off)}$	ID=19A, RL=1.5Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		28		ns
Fall time	t_f	ID=19A, RL=1.5Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		6.5		ns
Diode reverse recovery time	t_{rr}	IF=38A, VGS=0V, di/dt=100A/μs		40		ns
Diode reverse recovery charge	Q_{rr}	IF=38A, VGS=0V, di/dt=100A/μs		44		nC

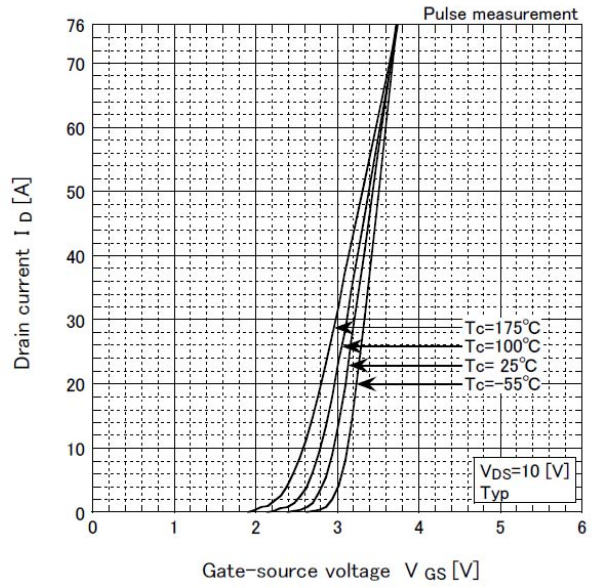
* : See the original Specifications

CHARACTERISTIC DIAGRAMS

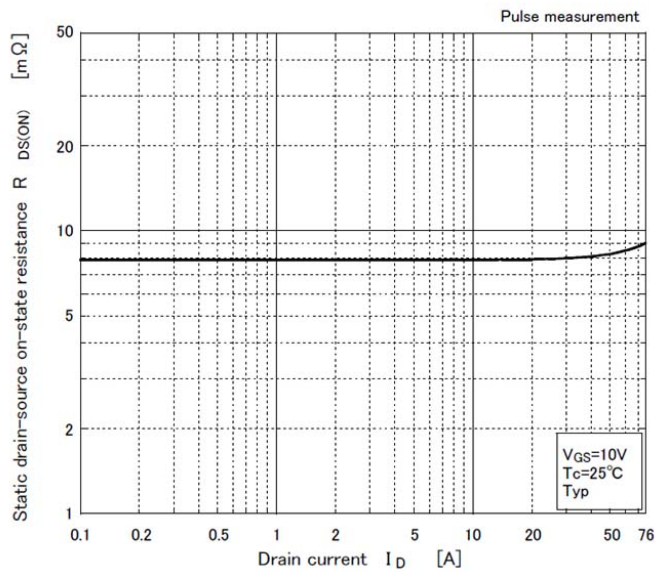
Typical output characteristics



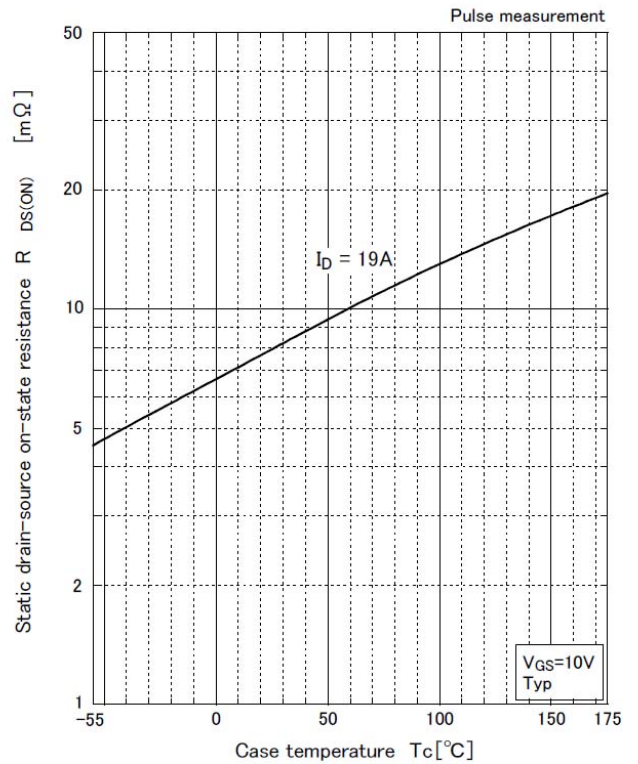
Transfer characteristics



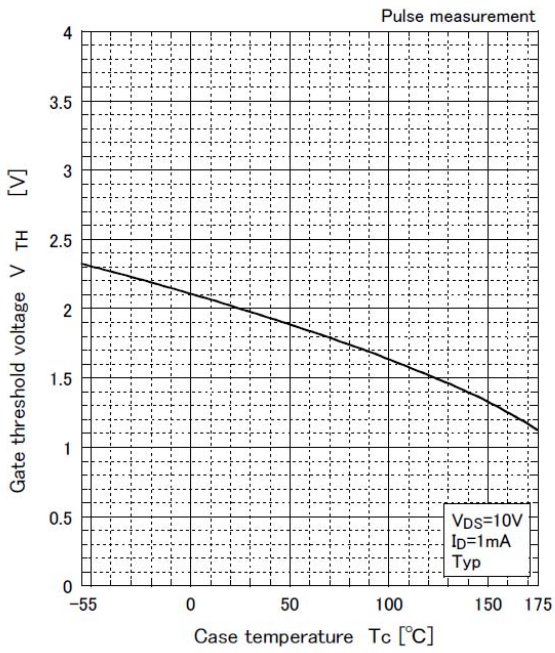
Static drain-source on-state resistance vs drain current



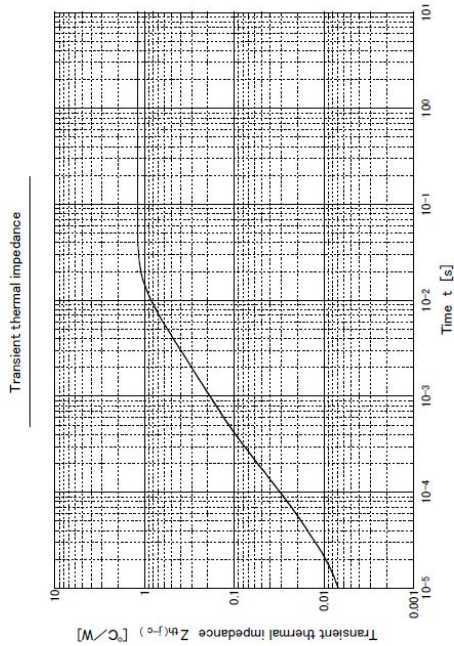
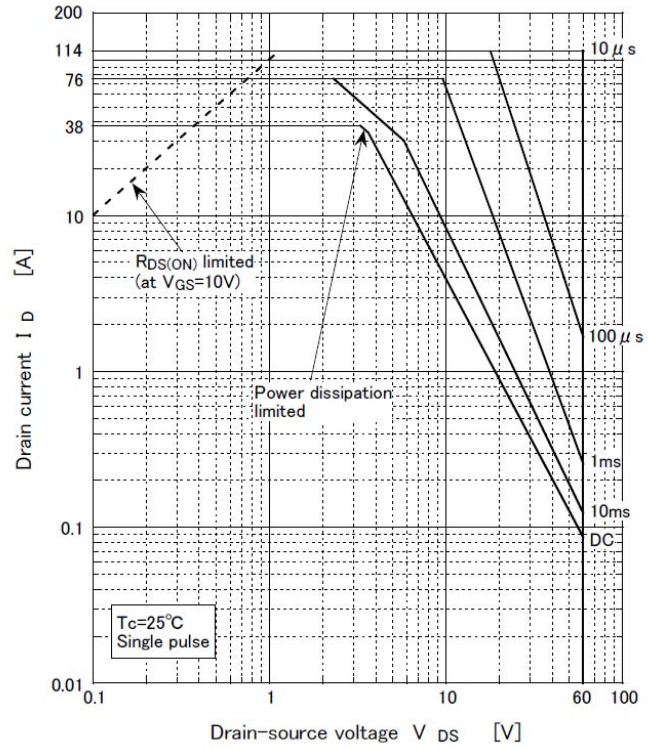
Static drain-source on-state resistance vs case temperature



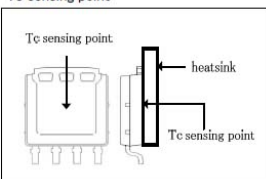
Gate threshold voltage vs case temperature



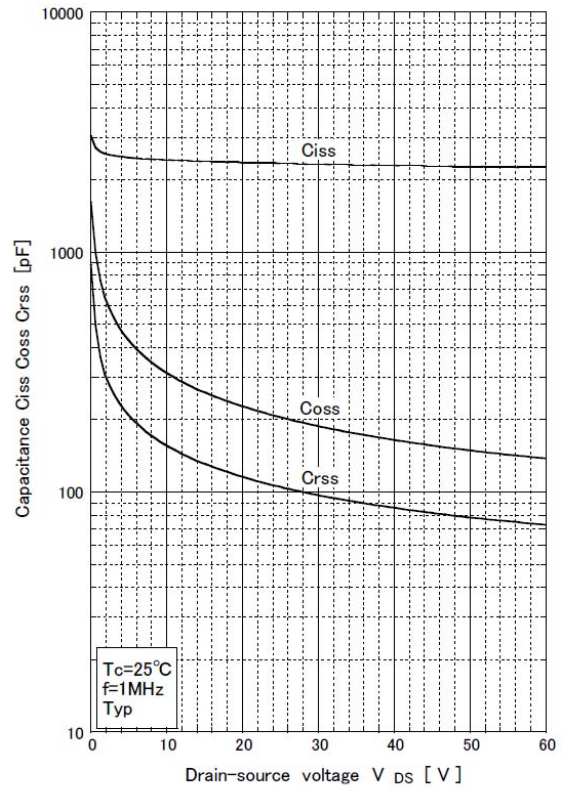
Safe operating area



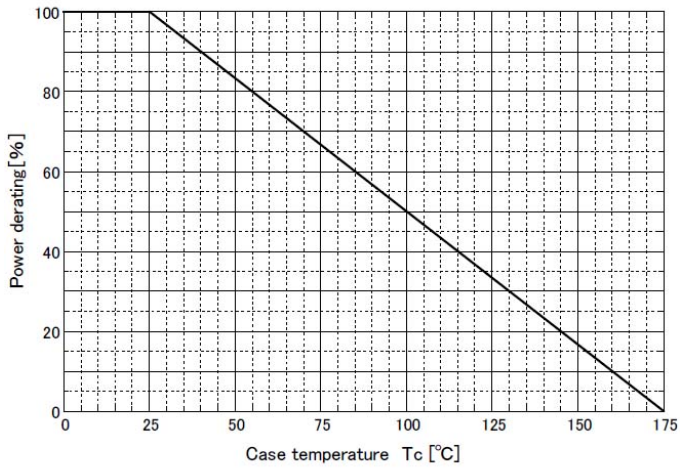
T_c sensing point



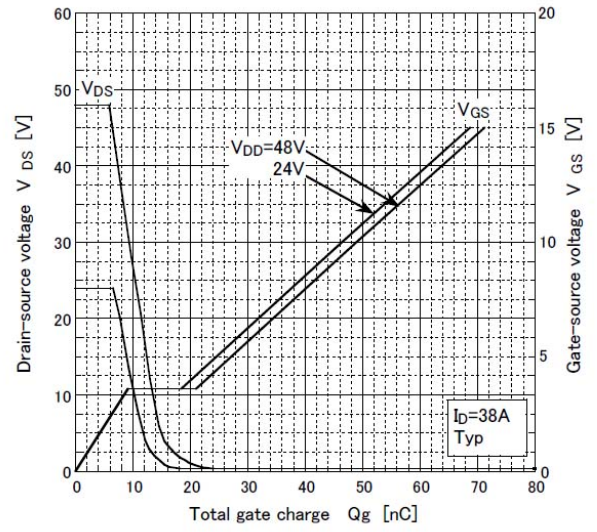
Capacitance characteristics



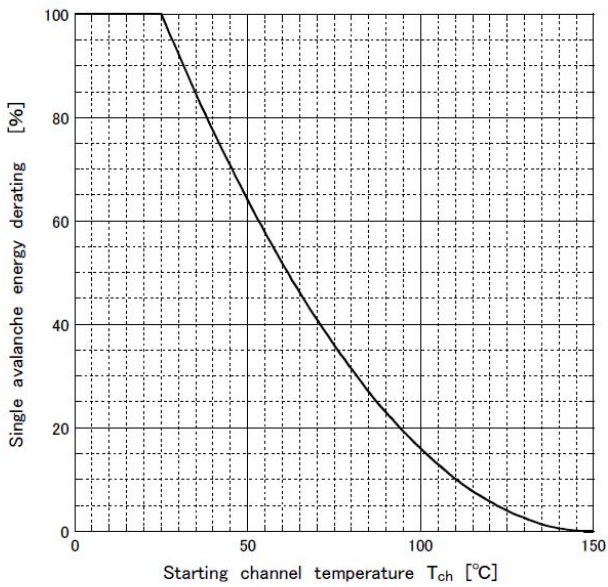
Power derating - case temperature



Gate charge characteristics

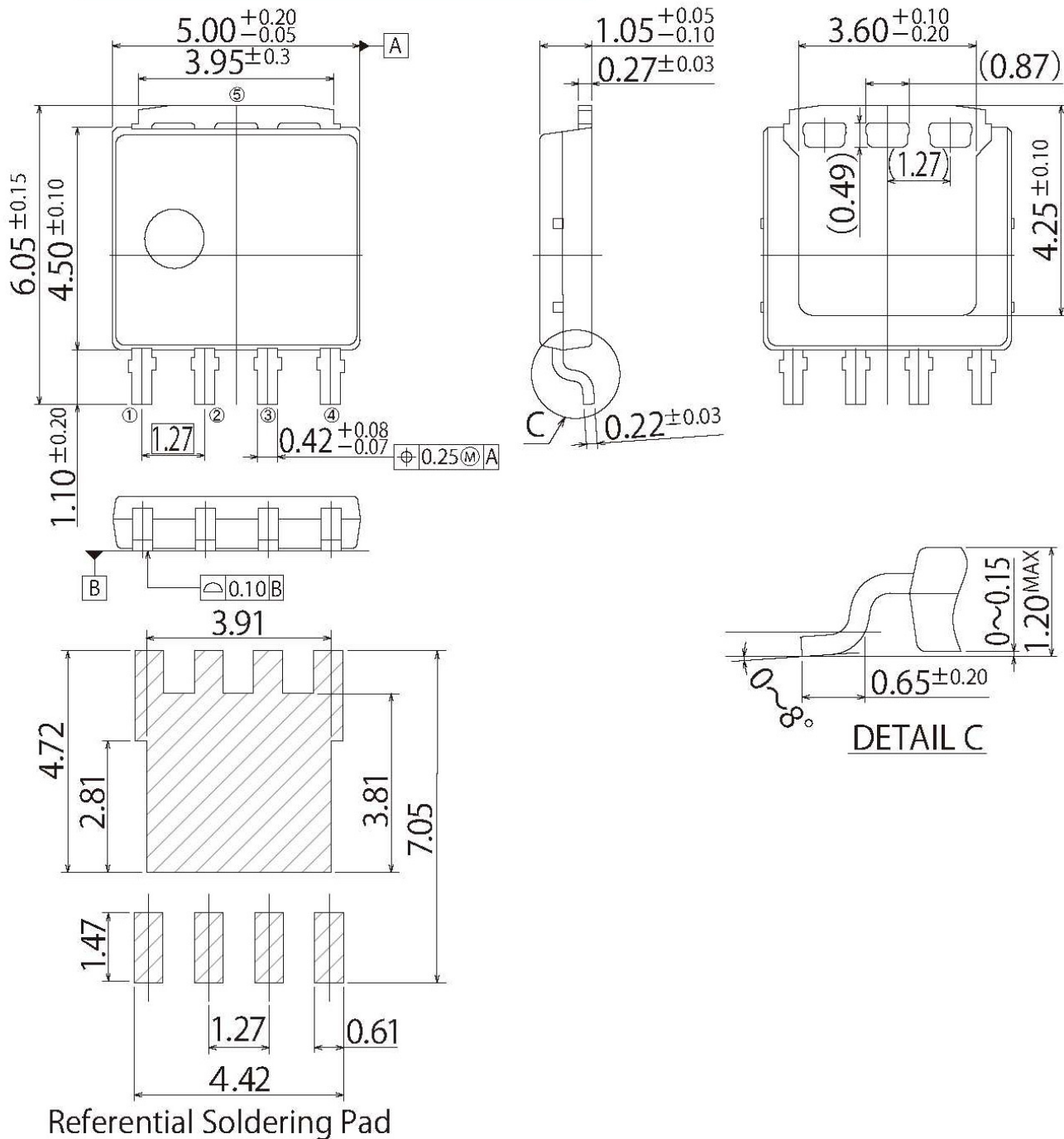


Single avalanche energy derating vs channel temperature



G7

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



Notes

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