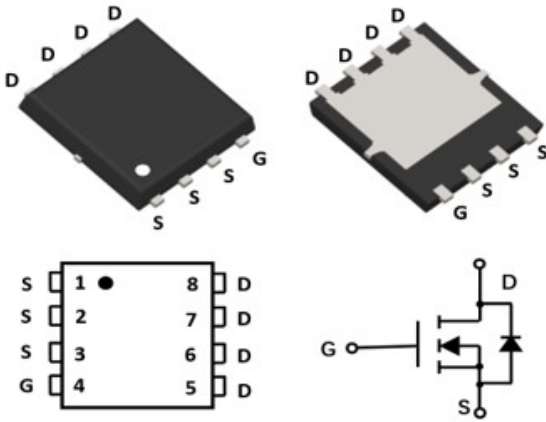


N-Channel Enhancement Mode Field Effect Transistor

DFN 5X6



Product Summary

- V_{DS} 100V
- I_D 40A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) < 17.5 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 21.5 mohm
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_c=25^\circ C$	I_D	40	A
	$T_c=100^\circ C$		25.3	
Pulsed Drain Current ^A		I_{DM}	160	A
Avalanche energy ^B		E_{AS}	81	mJ
Total Power Dissipation ^C	$T_c=25^\circ C$	P_D	60	W
	$T_c=100^\circ C$		24	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	$t \leq 10S$	$R_{\theta JA}$	15	20	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ^D	Steady-State		40	50	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.7	2.1	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
LMG40G10A			5000			13" reel

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		14	17.5	mΩ
		V _{GS} =4.5V, I _D =20A		17	21.5	
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.3	V
Maximum Body-Diode Continuous Current	I _S				40	A
Gate resistance	R _G	f=1MHz, Open drain		1		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-50V, V _{GS} =0V, f=1MHZ		1051		pF
Output Capacitance	C _{oss}			399		
Reverse Transfer Capacitance	C _{rss}			18		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =25A		16		nC
Gate-Source Charge	Q _{gs}			5.6		
Gate-Drain Charge	Q _{gd}			2.4		
Reverse Recovery Charge	Q _{rr}	I _F =20A, di/dt=100A/us		42		ns
Reverse Recovery Time	t _{rr}			39.8		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, I _{DS} =25A R _{GEN} =2.2Ω		39.2		ns
Turn-on Rise Time	t _r			11		
Turn-off Delay Time	t _{D(off)}			53.2		
Turn-off fall Time	t _f			15.8		

A. Repetitive rating; pulse width limited by max. junction temperature.

B. V_{DD}=50V, R_G=25Ω, L=0.5mH.

C. P_d is based on max. junction temperature, using junction-case thermal resistance.

D. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25° C. The Power dissipation PDSM is based on R_{θJA} ≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.

Typical Performance Characteristics

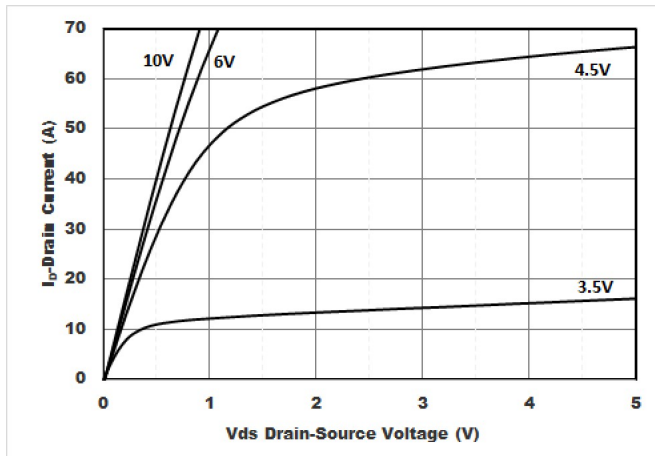


Figure1. Output Characteristics

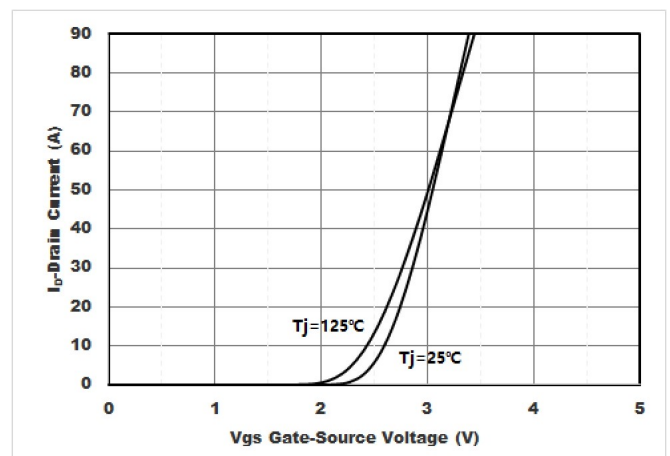


Figure2. Transfer Characteristics

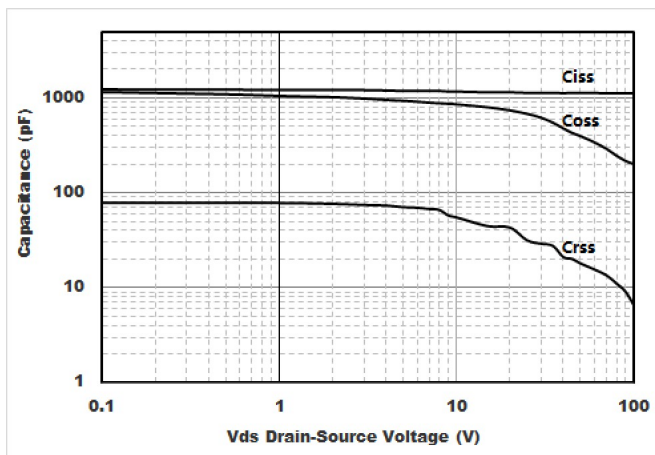


Figure3. Capacitance Characteristics

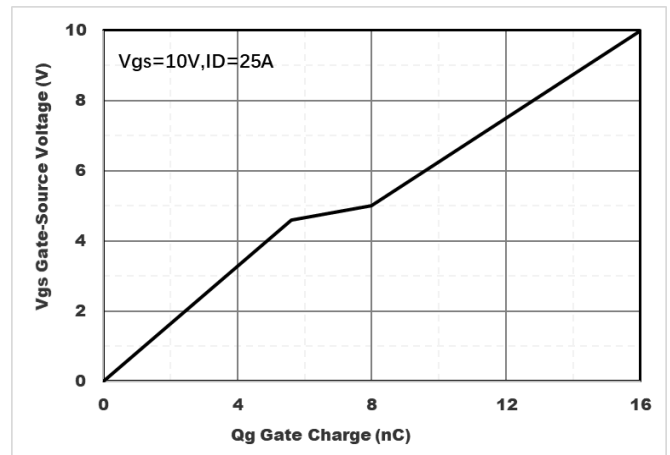


Figure4. Gate Charge

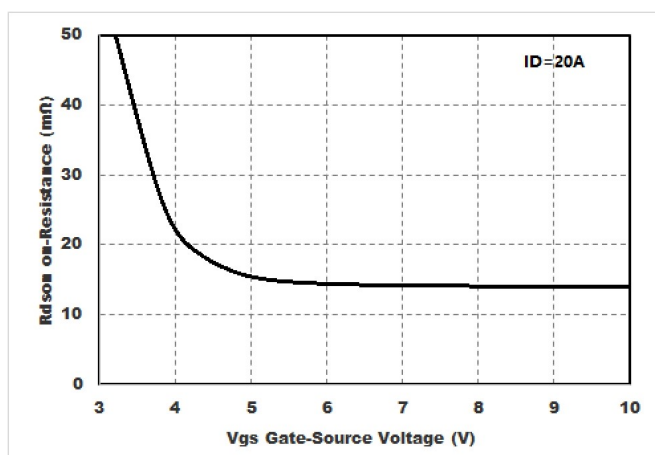


Figure5. : On-Resistance vs. Gate to Source Voltage

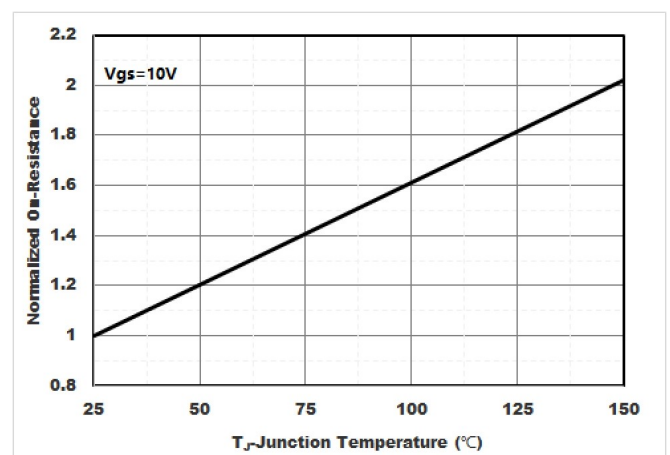


Figure6. Normalized On-Resistance

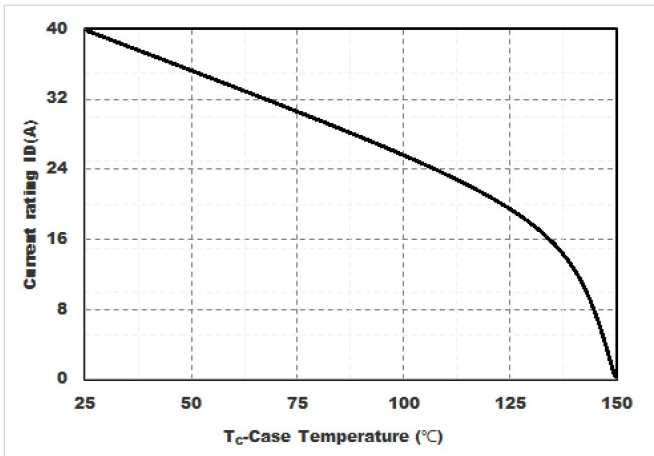


Figure7. Drain current

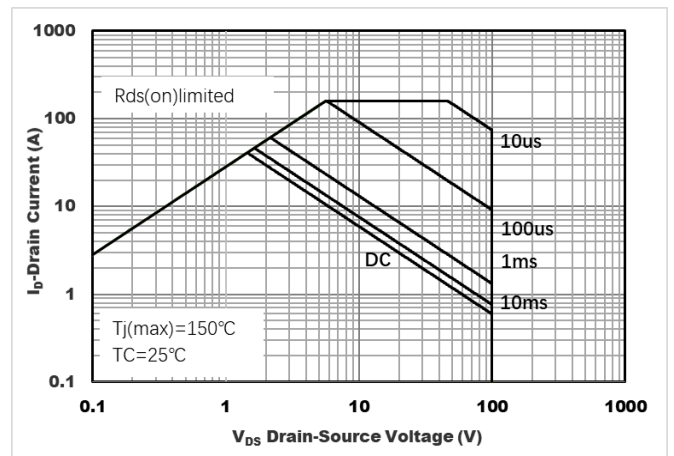


Figure8.Safe Operation Area

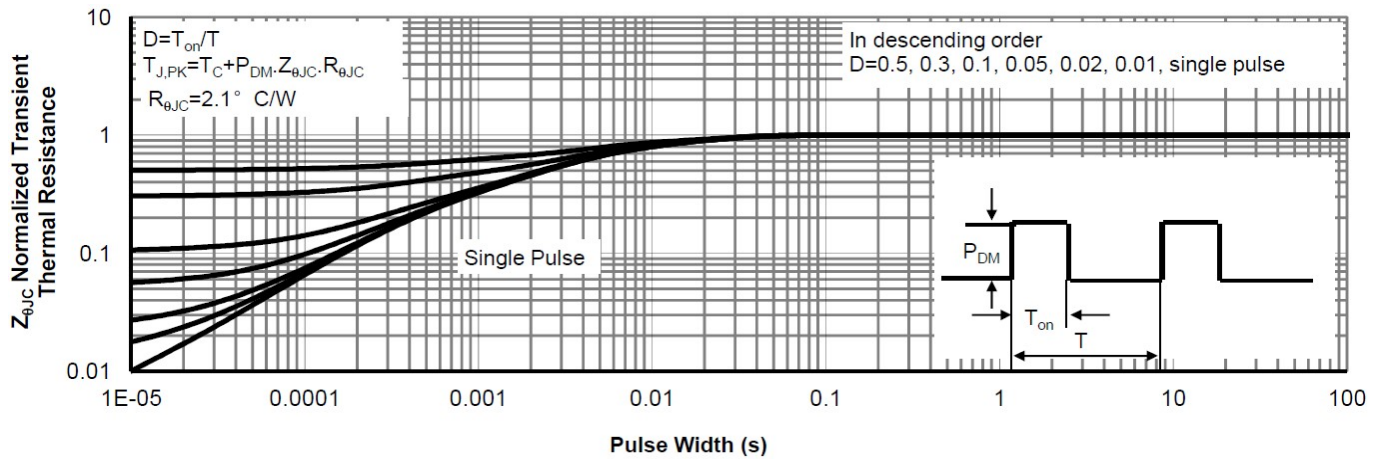
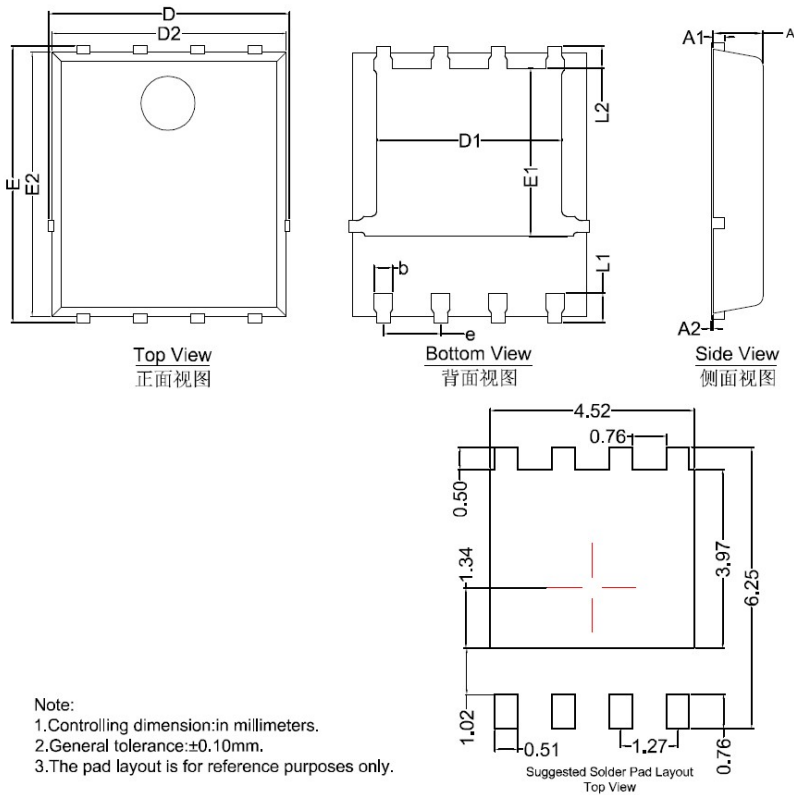


Figure9.Normalized Maximum Transient thermal impedance

DFN5x6 Package information



Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.10 mm.
 3. The pad layout is for reference purposes only.

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	5.15	5.35	5.55
E	5.95	6.15	6.35
A	1.00	1.10	1.20
A1	0.254 BSC		
A2			0.10
D1	3.92	4.12	4.32
E1	3.52	3.72	3.92
D2	5.00	5.20	5.40
E2	5.66	5.86	6.06
L1	0.56	0.66	0.76
L2	0.50 BSC		
b	0.31	0.41	0.51
e	1.27 BSC		