N-Channel Enhancement Mode MOSFET
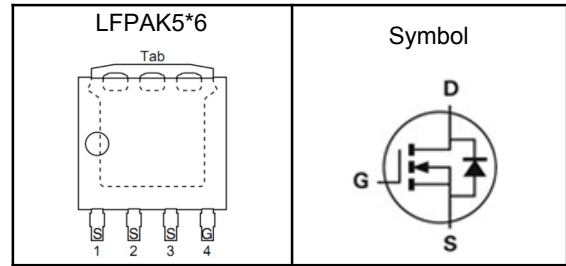
Features

● High Speed Power Switching

● Reliable and Rugged

● ROHS Compliant

●100% Avalanche Tested

Applications

● Power Management in Desktop Computer

● DC/DC Converters

Pin Description

	LFPAK5*6	Symbol

V_{DSS}	45	V
$R_{DS(ON)-Typ}$	0.5	mΩ
I_D	358	A

Absolute Maximum Ratings(T_A=25℃, Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	45	V
V_{GSS}	Gate-Source Voltage	±20	V
T_J	Maximum Junction Temperature	-55 to 175	℃
T_{STG}	Storage Temperature Range	-55 to 175	℃
I_{DM} [1]	Pulse Drain Current Tested	895	A
I_D	Continuous Drain Current	358	A
P_D	Maximum Power Dissipation	167	W
E_{AS}	Avalanche Energy, Single pulse	218	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJA}$	Thermal Resistance-Junction to Ambient	45	℃/W
$R_{θJC}$	Thermal Resistance-Junction to Case	0.9	℃/W

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150℃.

Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.

N-Channel Enhancement Mode MOSFET

Electrical Characteristics (T$_J$=25℃, Unless Otherwise Noted)

| Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_D$=250uA	45	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=36V, V$_{GS}$=0V	---	---	1	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=250uA	1	---	2	V
I$_{GSS}$	Gate Leakage Current	V$_{GS}$=±20V, V$_{DS}$=0V	---	---	±100	nA
R$_{DS(ON)}$	Drain-Source On-state Resistance	V$_{GS}$=10V, I$_D$=20A	---	0.5	0.7	mΩ
		V$_{GS}$=4.5V, I$_D$=10A	---	1.0	1.4	mΩ
Dynamic Characteristics[5]						
C$_{iss}$	Input Capacitance	V$_{DS}$=20V, V$_{GS}$=0V, Freq.=1MHz	---	6250	---	pF
C$_{oss}$	Output Capacitance		---	2046	---	
C$_{rss}$	Reverse Transfer Capacitance		---	118	---	
T$_{d(on)}$	Turn-on Delay Time	V$_{DS}$=20V,V$_{GS}$=10V, I$_D$=1A,R$_G$=1Ω	---	17	---	nS
T$_r$	Turn-on Rise Time		---	11	---	
T$_{d(off)}$	Turn-off Delay Time		---	52	---	
T$_f$	Turn-off Fall Time		---	92	---	
Q$_g$	Total Gate Charge	V$_{DS}$=20V,V$_{GS}$=10V, I$_D$=20A	---	85	---	nC
Q$_{gs}$	Gate-Source Charge		---	17	---	
Q$_{gd}$	Gate-Drain Charge		---	15	---	
Source-Drain Characteristics						
V$_{SD}$	Diode Forward Voltage	I$_S$=10A, V$_{GS}$=0V	---	---	1.1	V
t$_{rr}$	Reverse Recovery Time	I$_F$=10A,dI$_F$/dt=100A/us	---	62	---	nS
Q$_{rr}$	Reverse Recovery Charge		---	92	---	nC

Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤ : Guaranteed by design, not subject to production testing.

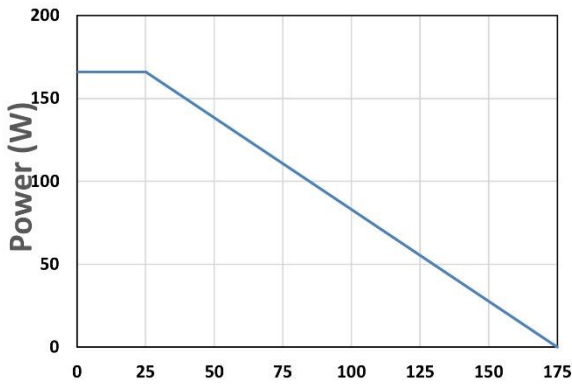# N-Channel Enhancement Mode MOSFET

Typical Characteristics
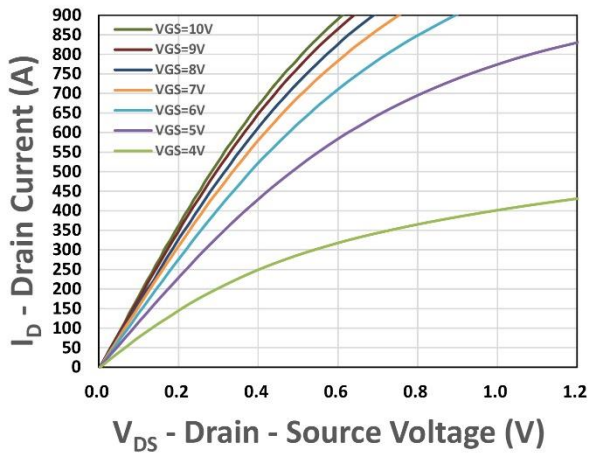
Figure 1. Output Characteristics
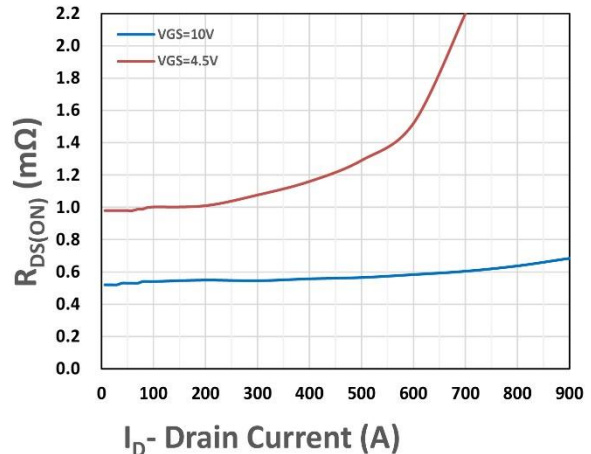
Figure 2. On-Resistance vs. ID
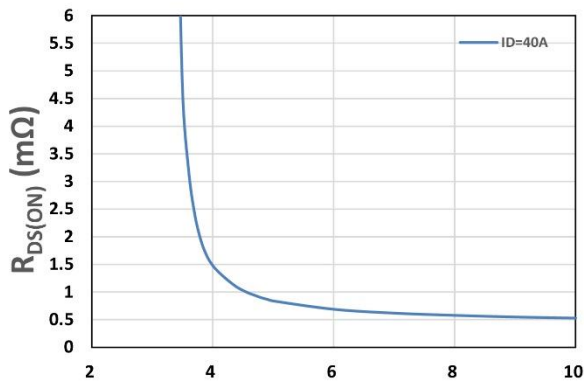
Figure 3. On-Resistance vs. VGS
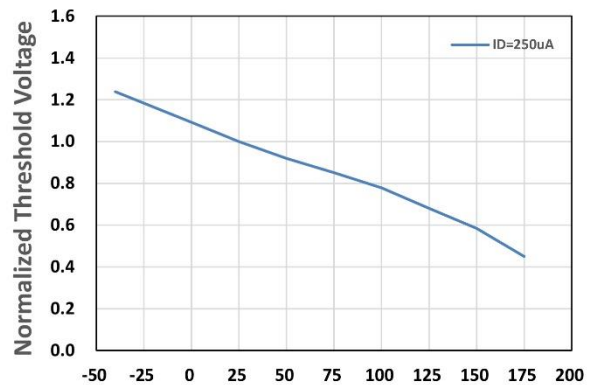
Figure 4. Gate Threshold Voltage
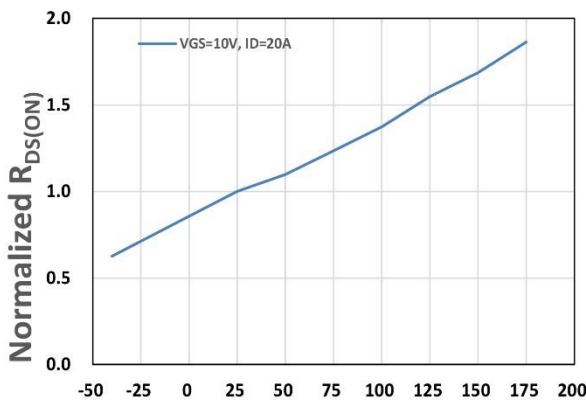
Figure 5. Drain-Source On Resistance
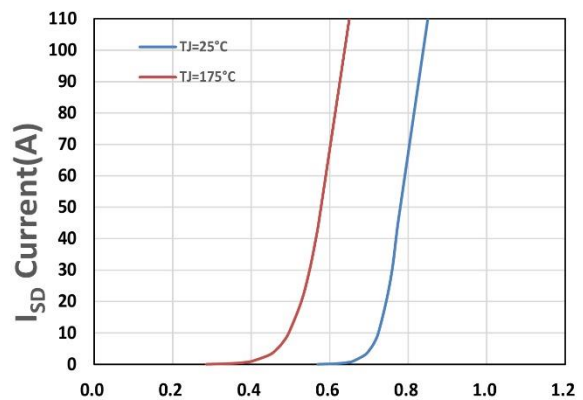
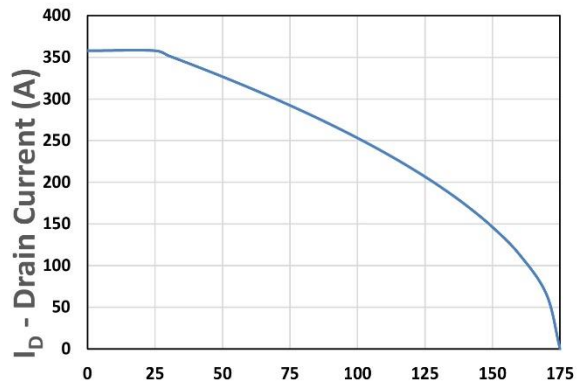Figure 6. Source-Drain Diode Forward

N-Channel Enhancement Mode MOSFET
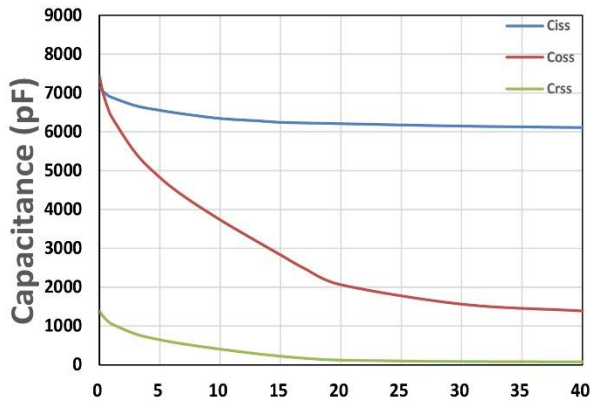
Figure 7. Capacitance
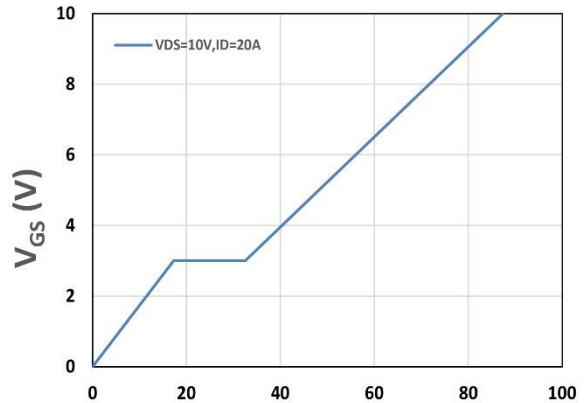
Figure 8. Gate Charge Characteristics

Figure 9. Power Dissipation

Figure 10. Drain Current
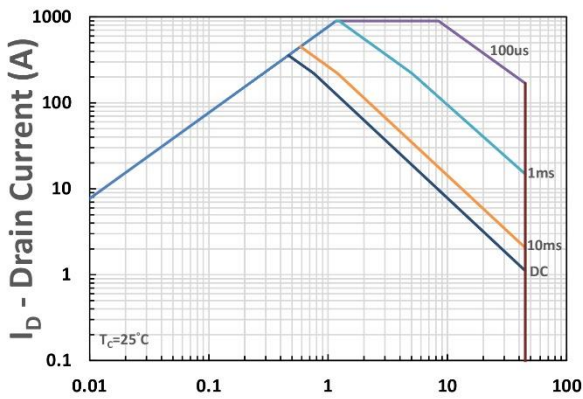
Figure 11. Safe Operating Area
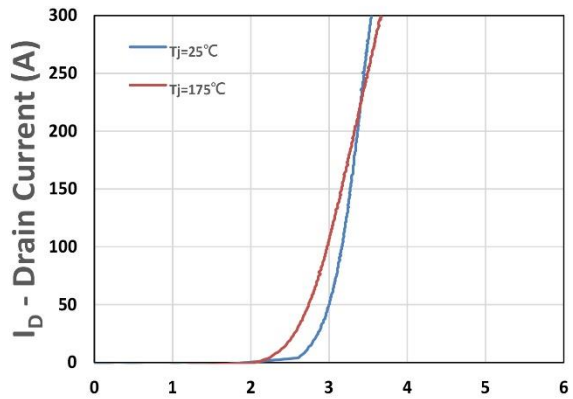
Figure 12. Transfer Characteristics

N-Channel Enhancement Mode MOSFET

LFPAK5*6 Package Outline Data

Section A-A   Section B-B   DETAIL A
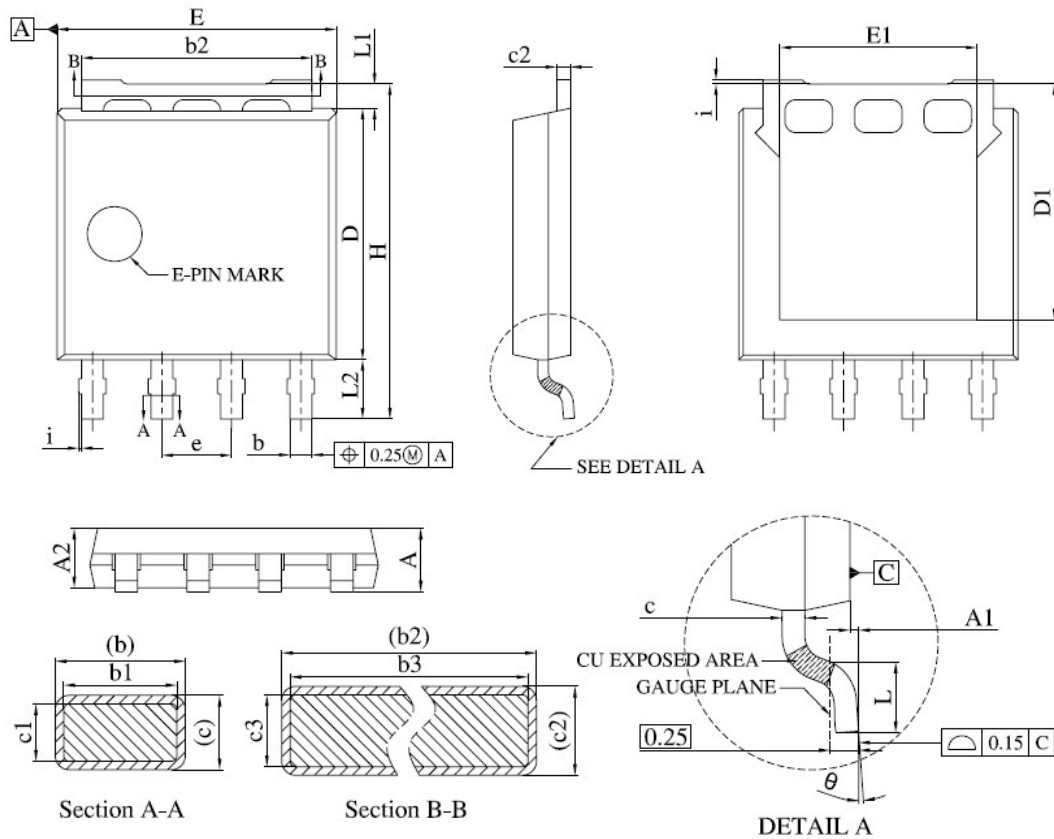
Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	1.00	1.30
A1	0.00	0.15
A2	0.98	1.12
b	0.35	0.50
b1	0.32	0.46
b2	4.02	4.41
b3	4.00	4.37
c	0.19	0.25
c1	0.17	0.23
c2	0.24	0.30
c3	0.22	0.28
D	4.45	4.70
D1	-	4.45
E	4.95	5.30
E1	3.50	3.70
e	1.27 BSC.	

Symbol	Dimensions In Millimeters	
	MIN.	MAX.
H	5.95	6.25
i	-	0.25
L	0.40	0.85
L1	0.27	0.57
L2	0.80	1.30
θ	0°	8°