MOSFET Silicon N-Channel MOS

1. Applications

Single-ended flyback or two-transistor forward topologies.
PC power, PD Adaptor, LCD & PDP TV and LED lighting.

2. Features

Low drain-source on-resistance: RDS(ON) = 230mΩ (typ.)
Easy to control Gate switching
Enhancement mode: Vth = 2.8 to 4.2 V

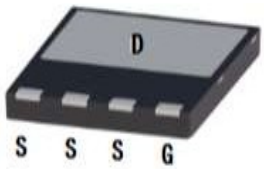
Table 1 Key Performance Parameters

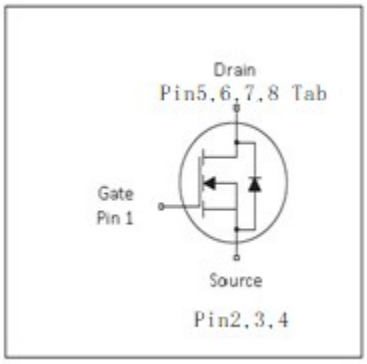
Parameter	Value	Unit
V_{DS} @ $T_{j,max}$	700	V
$R_{DS(on),max}$	265	mΩ
$Q_{g,typ}$	23.2	nC
$I_{D,pulse}$	58	A

3. Packaging and Internal Circuit

Part Name	Package	Marking
ASM65R265E	DFN8X8	ASM65R265E

DFN8X8





1 Maximum ratings

at T_j = 25°C, unless otherwise specified

Table 2 Maximum ratings

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Continuous drain current[1]	I_D		-	15	A	T_C=25°C
Pulsed drain current[2]	$I_{D,pulse}$	-	-	58	A	T_C=25°C
Avalanche energy, single pulse	E_{AS}	-	-	198	mJ	Tc=25°C,VDD=50V, Id=6.3A, L=10mH, RG=25Ω
Avalanche current, single pulse	I_{AR}	-	-	6.3	A	Tc=25°C,VDD=50V, L=10mH, RG=25Ω
Gate source voltage (static)	V_{GS}	-30	-	30	V	static;
Power dissipation	P_{tot}	-	-	125	W	T_C=25°C
Storage temperature	T_{stg}	-55	-	150	°C	
Operating junction temperature	T_j	-55	-	150	°C	

[1] Limited by $T_{j,max}$. Maximum Duty Cycle D = 0.50
[2] Pulse width t_p limited by $T_{j,max}$
[3] Identical low side and high side switch with identical R_G

2 Thermal characteristics

Thermal characteristics

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Thermal resistance, junction - case	R_{thJC}	-	-	0.71	°C/W	-
Thermal resistance, junction - ambient	R_{thJA}	-	-	62	°C/W	device on PCB, minimal footprint

3 Electrical characteristics

at T_j=25°C, unless otherwise specified

Table 4 Static characteristics

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Drain-source breakdown voltage	$V_{(BR)DSS}$	650	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{(GS)th}$	2.8		4.2	V	V_{DS}=V_{GS}, I_D=250uA
Zero gate voltage drain current	I_{DSS}	-	-	1	uA	V_{DS}=650V, V_{GS}=0V, T_j=25°C
Gate-source leakage current	I_{GSS}	-	-	100	nA	V_{GS}=30V, V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	230	265	mΩ	V_{GS}=10V, I_D=5.5A, T_j=25°C
Gate resistance (Intrinsic)	R_G	-	32	-	Ω	f=1MHz, open drain

Table 5 Dynamic characteristics

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Input capacitance	C_{iss}	-	1160	-	pF	V_{GS}=0V, V_{DS}=400V, f=250kHz
Output capacitance	C_{oss}	-	29.1	-	pF	V_{GS}=0V, V_{DS}=400V, f=250kHz
Reverse transfer capacitance	C_{rss}	-	0.8	-	pF	V_{GS}=0V, V_{DS}=400V, f=250kHz
Turn-on delay time	$t_{d(on)}$	-	21.8	-	ns	V_{DD}=400V, V_{GS}=13V, I_D=5.2A, R_G=10.2Ω
Rise time	t_r	-	23.4	-	ns	V_{DD}=400V, V_{GS}=13V, I_D=5.2A, R_G=10.2Ω
Turn-off delay time	$t_{d(off)}$	-	122.8	-	ns	V_{DD}=400V, V_{GS}=13V, I_D=5.2A, R_G=10.2Ω
Fall time	t_f	-	21.4	-	ns	V_{DD}=400V, V_{GS}=13V, I_D=5.2A, R_G=10.2Ω

Table 6 Gate charge characteristics

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Gate to source charge	Q_{gs}	-	5.4	-	nC	V_{DD}=400V, I_D=5.2A, V_{GS}=0 to 10V
Gate to drain charge	Q_{gd}	-	8.1	-	nC	V_{DD}=400V, I_D=5.2A, V_{GS}=0 to 10V
Gate charge total	Q_g	-	23.2	-	nC	V_{DD}=400V, I_D=5.2A, V_{GS}=0 to 10V

Table 7 Reverse diode characteristics

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Diode forward voltage	V_{SD}	-	0.74	-	V	V_{GS}=0V, I_F=1A, T_j=25°C
Reverse recovery time	t_{rr}	-	210.5	-	ns	V_R=400V, I_F=5.2A, di_F/dt=100A/μs
Reverse recovery charge	Q_{rr}	-	1.7	-	uC	V_R=400V, I_F=5.2A, di_F/dt=100A/μs
Peak reverse recovery current	I_{rrm}	-	18	-	A	V_R=400V, I_F=5.2A, di_F/dt=100A/μs

4 Test Circuits

Table 8 Diode characteristics

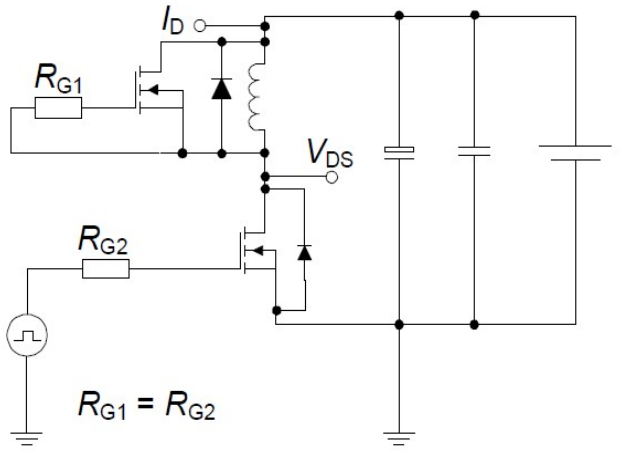
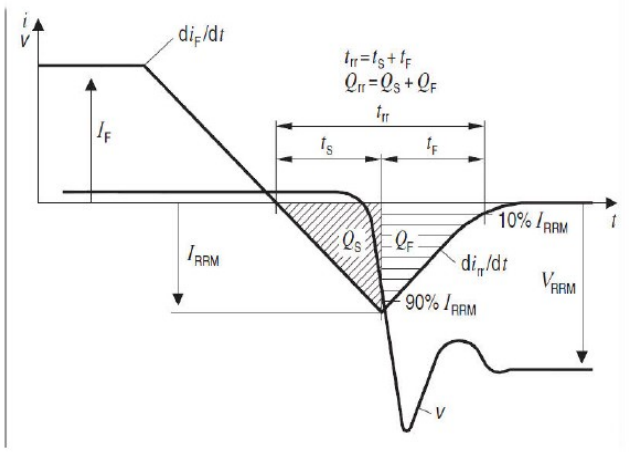
Test circuit for diode characteristics	Diode recovery waveform
	

Table 9 Switching times

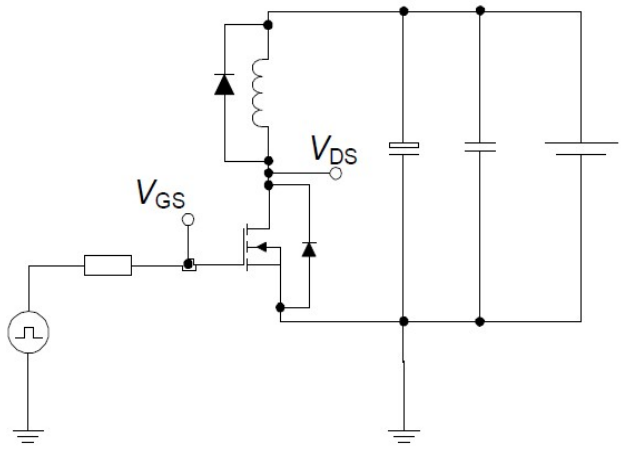
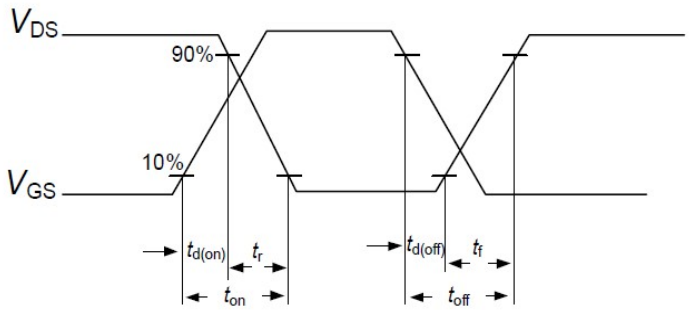
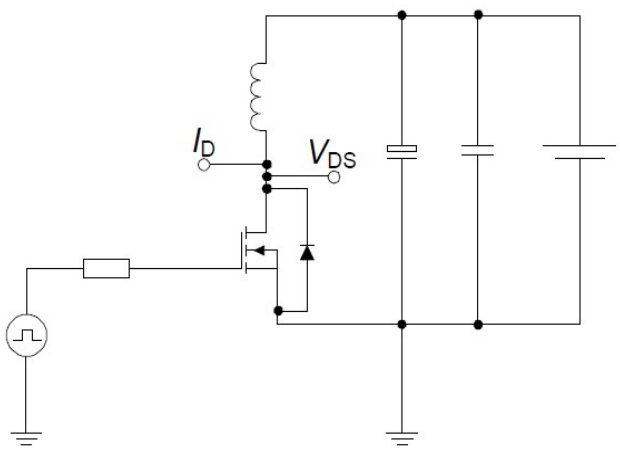
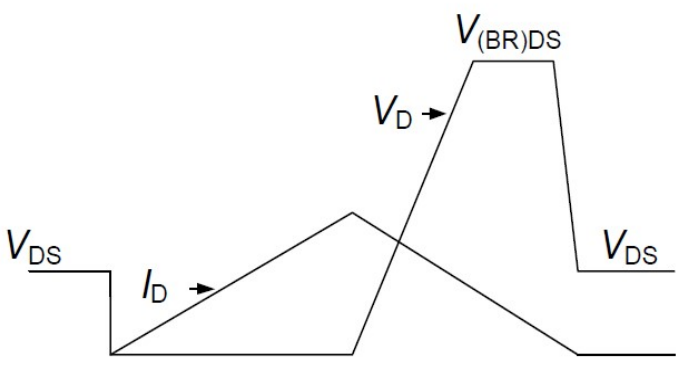
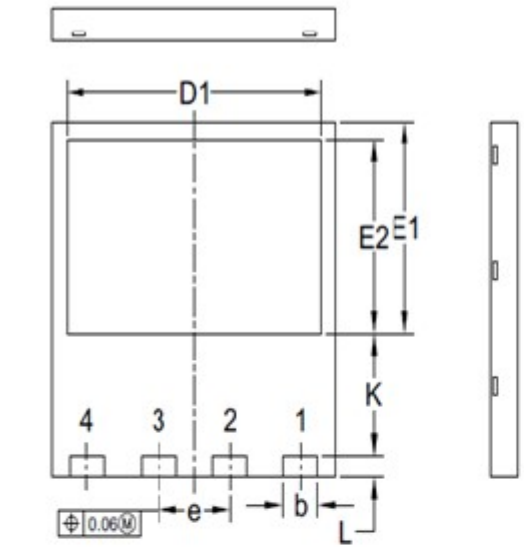
Switching times test circuit for inductive load	Switching times waveform
	

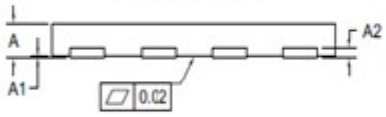
Table 10 Unclamped inductive load

Unclamped inductive load test circuit	Unclamped inductive waveform
	

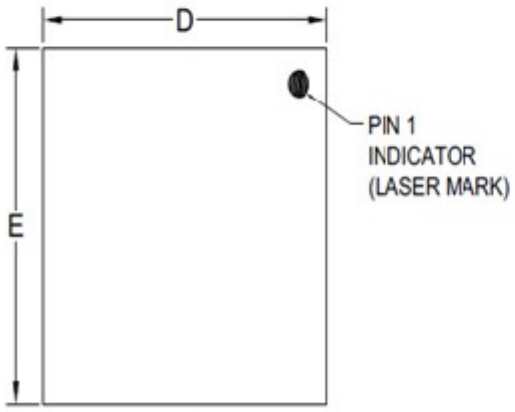
5 Package Outlines



BOTTOM VIEW



SIDE VIEW



TOP VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.70	0. 8	0. 9
A1	0.00	—	0.05
A2		0.20REF	
b	0.90	1.00	1.10
D	7.90	8.00	8.10
D1	7.10	7.20	7.30
E	7.90	8.00	8.10
E1	4.65	4.75	4.85
E2	4.25	4.35	4.45
e		2.00BSC	
L	0.40	0.50	0.60
K	2.65	—	—

NOTES:
1.CONTROLLING DIMENSIONS ARE IN MILLIMETERS(ANGLES IN DEGREES).
2. COPLANARITY APPLIES TO THE EXPOSED PAD AS THE TERMINALS.

Outline PG-DFN8X8

Revision History

Revision	Date	Subjects (major changes since last revision)
1.0	2021-11-22	Preliminary version
1.1	2021-12-06	Updated Outline PG