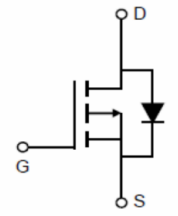
LM3D26P06

-60V P-Channel Enhancement Mode MOSFET

General Description

The LM3D26P06 uses advanced SGT technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. The package form is DFN3.3*3.3-8 , which accords with the ROHS standard and Halogen Free standard.

Inner Equivalent Principium Chart

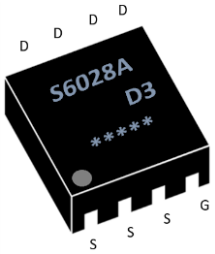


General Features

V_{DS} = -60V I_D =-26.5A

$R_{DS(ON)}$ < 25 mΩ @ V_{GS}=-10V

Marking and Pin Assignment



Applications

- Battery switching application
- Hard switched and high frequency circuits
- Power Management

Package Marking and Ordering Information

Marking	Part Number	Package	Packing	Qty.
S6028A/LW D3/D.C.	LM3D26P06	DFN3.3*3.3-8	Reel	5000 Pcs

Absolute Maximum Ratings

Symbol	Parameter		Value	Units
V_{DSS}	Drain-to-Source Voltage		-60	V
I_D	Continuous Drain Current	T_C=25℃	-26.5	A
	Continuous Drain Current	T_C=100℃	-16.7	A
I_{DM}[a1]	Pulsed Drain Current		-100	A
V_{GS}	Gate-to-Source Voltage		±20	V
P_D	Power Dissipation		35	W
E_{AS}[a2]	Single pulse avalanche energy		200	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range		150, -55 to 150	℃
T_L	Maximum Temperature for Soldering		260	℃

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	3.57	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	℃/W

Electrical Characteristic (T_A = 25 °C, unless otherwise specified)

Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	-60	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=-60V, V_{GS}=0V	--	--	1.0	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=-20V, V_{DS}=0V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=+20V, V_{DS}=0V	--	--	-100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1.3	-1.8	-2.3	V
$R_{DS(ON)1}$	Drain-to-Source On-Resistance	V_{GS}=-10V, I_D=-10A	--	20	25	mΩ
$R_{DS(ON)2}$	Drain-to-Source On-Resistance	V_{GS}=-4.5V, I_D=-8A	--	25	32	mΩ
g_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-5A	--	20	--	S

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} =-30V f = 1.0MHz	--	1500	--	pF
C_{oss}	Output Capacitance		--	248	--	
C_{rss}	Reverse Transfer Capacitance		--	12	--	
R_G	Gate resistance	V_{GS}=0V,V_{DS} Open	--	8.0	--	Ω

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D =-10A V_{DS} =-30V V_{GS} =-10V R_G = 3Ω	--	15	--	ns
t_r	Rise Time		--	17	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	40	--	
t_f	Fall Time		--	45	--	
Q_g	Total Gate Charge	V_{GS} =-10V V_{DS} = -30V I_D =-10A	--	22	--	nC
Q_{gs}	Gate Source Charge		--	3.7	--	
Q_{gd}	Gate Drain Charge		--	3.0	--	

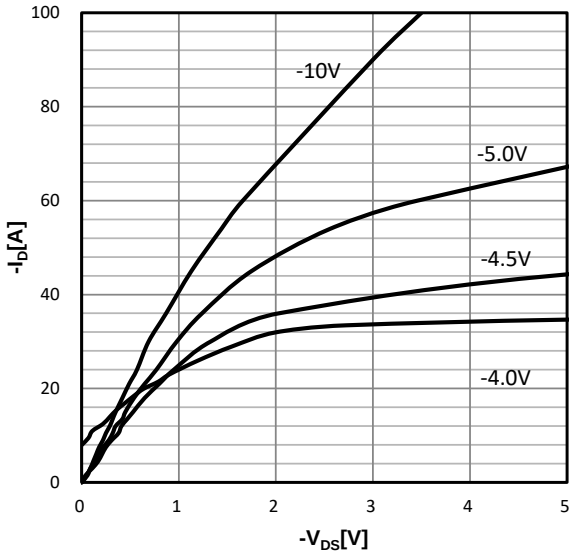
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	T_C =25 °C	--	--	-26.5	A
I_{SM}	Diode Pluse Current		--	--	-100	A
V_{SD}	Diode Forward Voltage	I_S=-10A, V_{GS}=0V	--	--	-1.2	V
t_{rr}	Reverse Recovery time	I_S=-10A, V_{DD}=-30V, dI/dt=100A/us	--	60	--	ns
Q_{rr}	Reverse Recovery Charge		--	105	--	nC

a1： Repetitive rating; pulse width limited by maximum junction temperature

a2： V_{DD}=-30V,L=1.0mH, R_G=25Ω, Starting T_j=25℃

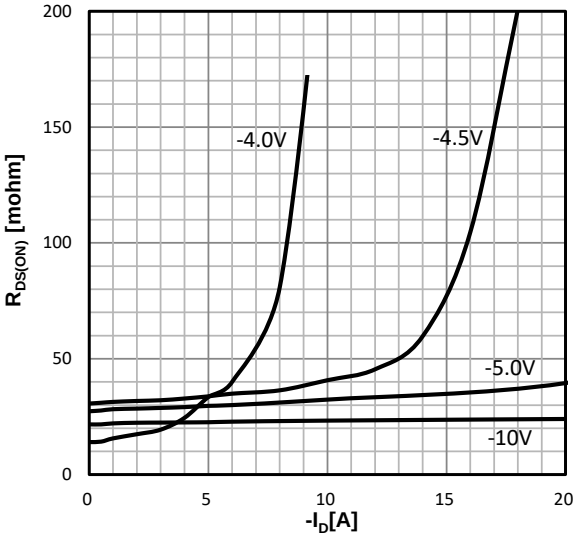
Characteristics Curve

Figure 1: Typ. output characteristics



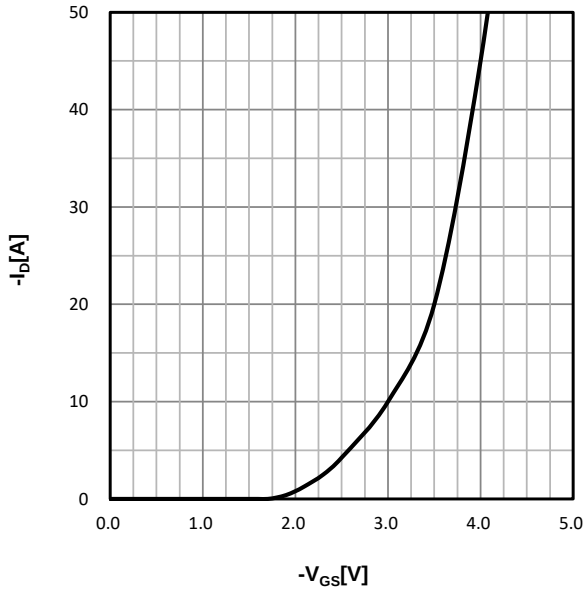
$I_D=f(V_{DS})$, T_j=25 °C; parameter: V_{GS}

Figure 2: Typ. drain-source on resistance



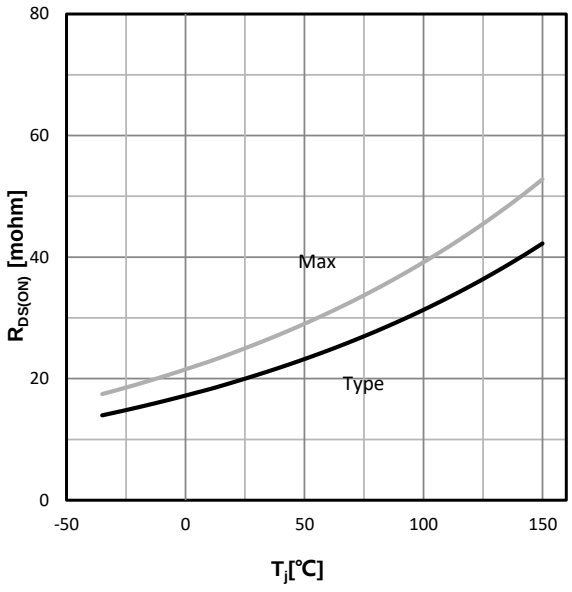
$R_{DS(on)}=f(I_D)$, T_j=25 °C; parameter: V_{GS}

Figure 3: Typ. transfer characteristics



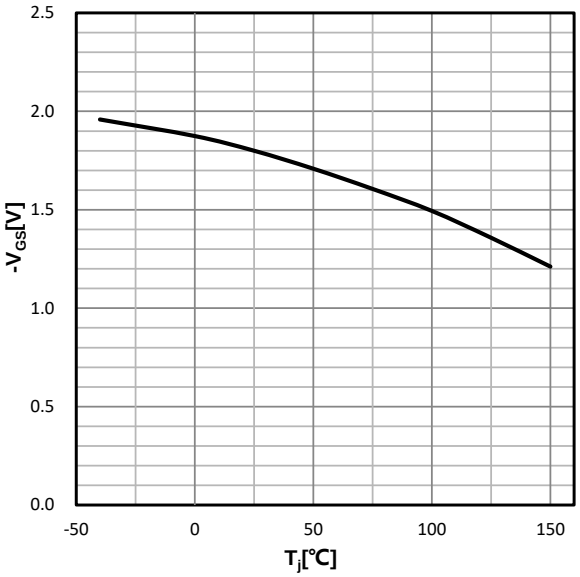
$I_D=f(V_{GS})$, $|V_{DS}|>2|I_D|R_{DS}(on)max$;

Figure 4: drain-source on resistance



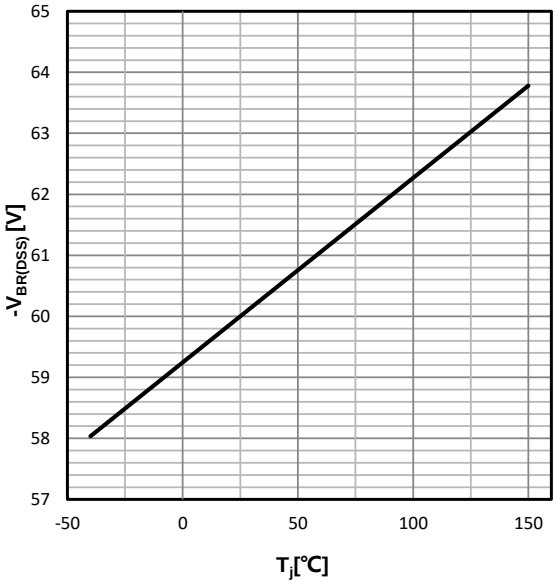
$R_{DS(on)}=f(T_j)$, I_D=-10A, V_{GS}=-10V;

Figure 5: Typ. gate threshold voltage



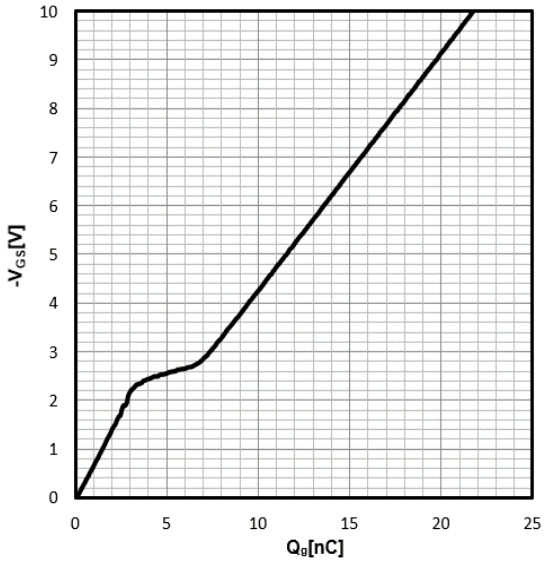
$V_{GS}=f(T_j)$, $V_{GS}=V_{DS,}$ I_D=-250μA;

Figure 6: Drain-source breakdown voltage



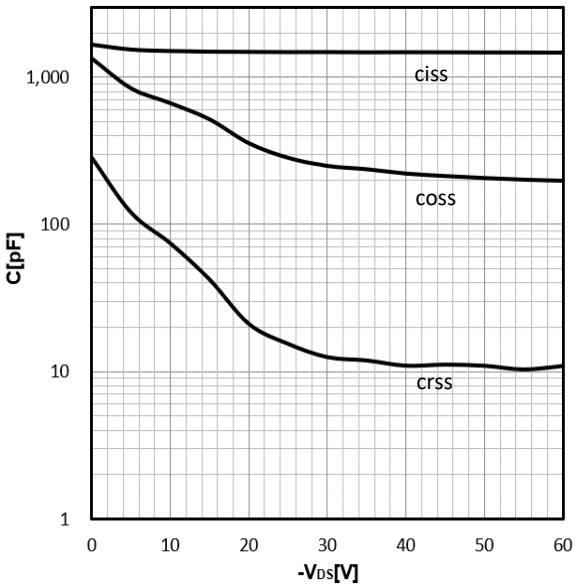
$V_{BR(DSS)}=f(T_j)$; I_D=-250μA;

Figure 7: Typ. gate charge



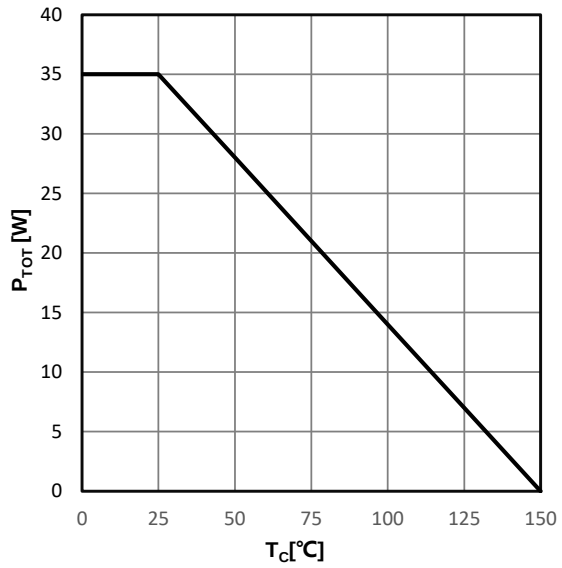
$V_{GS}=f(Q_g)$, I_D=-10A, T_j=25 °C; parameter: V_{DS}

Figure 8: Typ. Capacitances



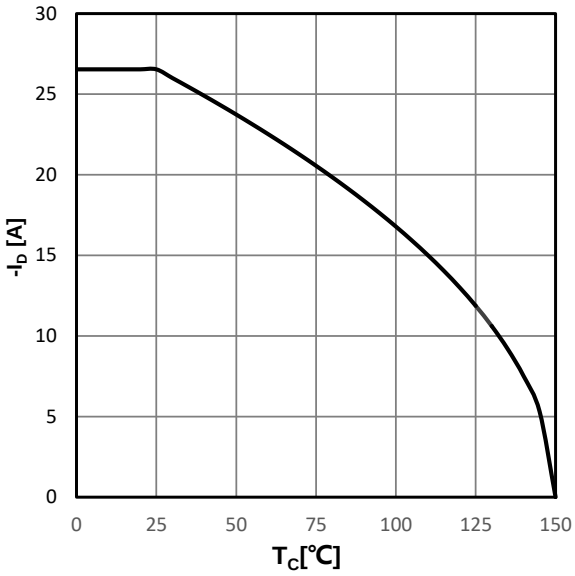
C=f(V_{DS}); V_{GS}=0V; f=1.0 MHz;

Figure 9: Power dissipation



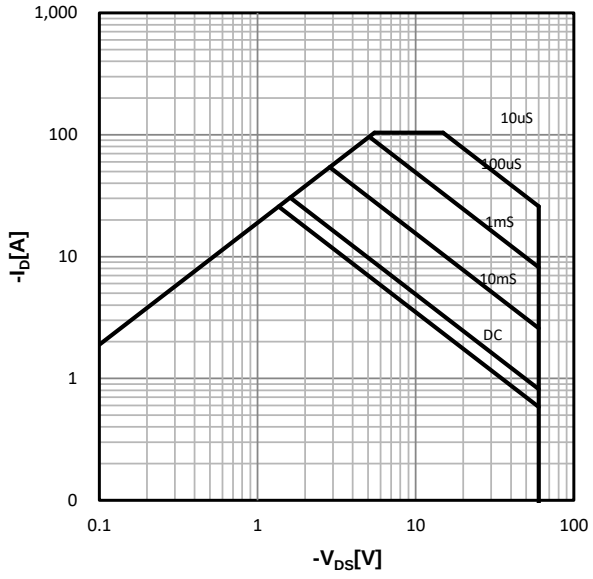
$P_{tot}=f(T_C)$;

Figure 10:Drain current



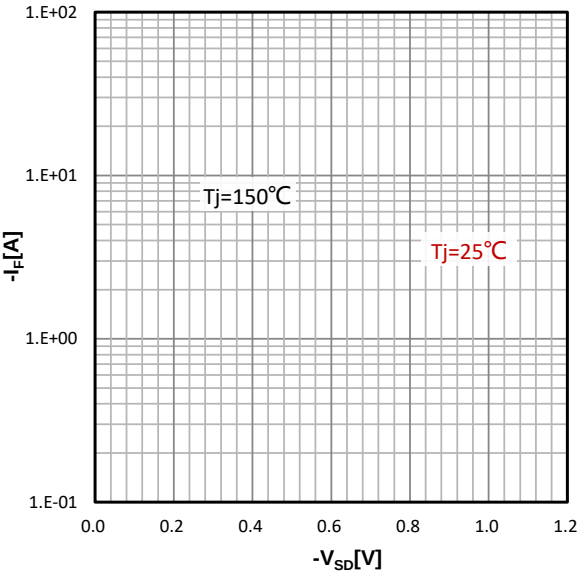
$I_D=f(T_C)$;

Figure 11: Safe operating area



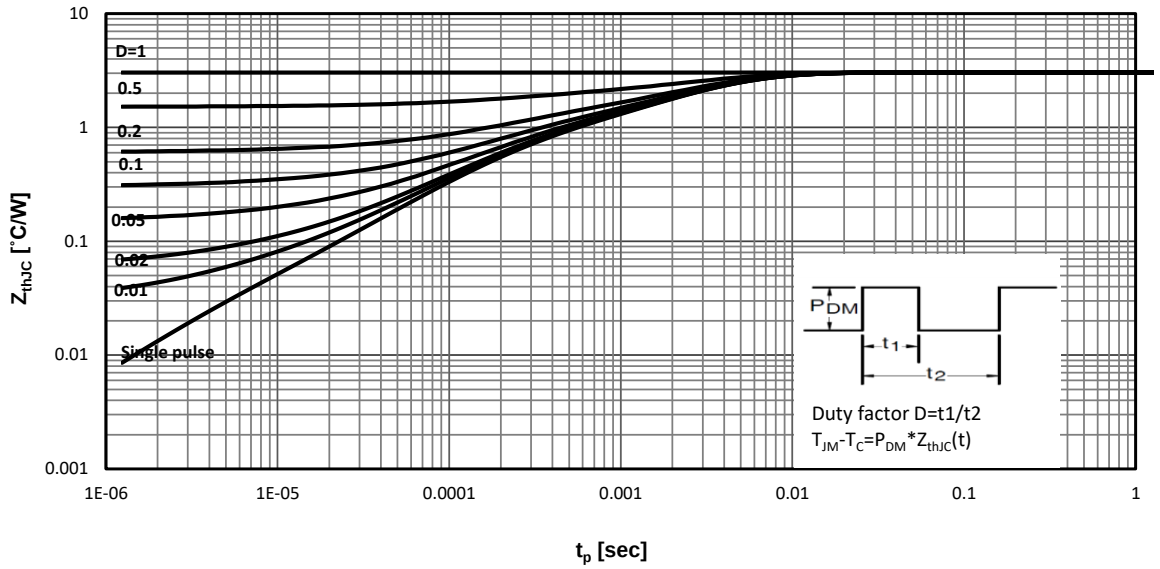
$I_D=f(V_{DS})$; T_C=25 °C; D=0; parameter: tp

Figure 12: Typ. forward characteristics



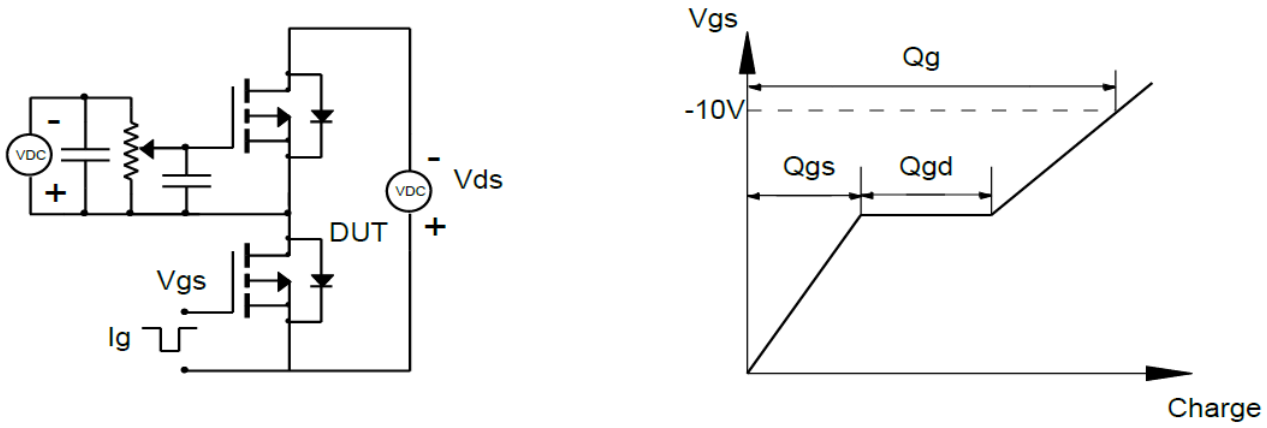
$I_F=f(V_{SD})$;

Figure 13: Max. Transient Thermal Impedance

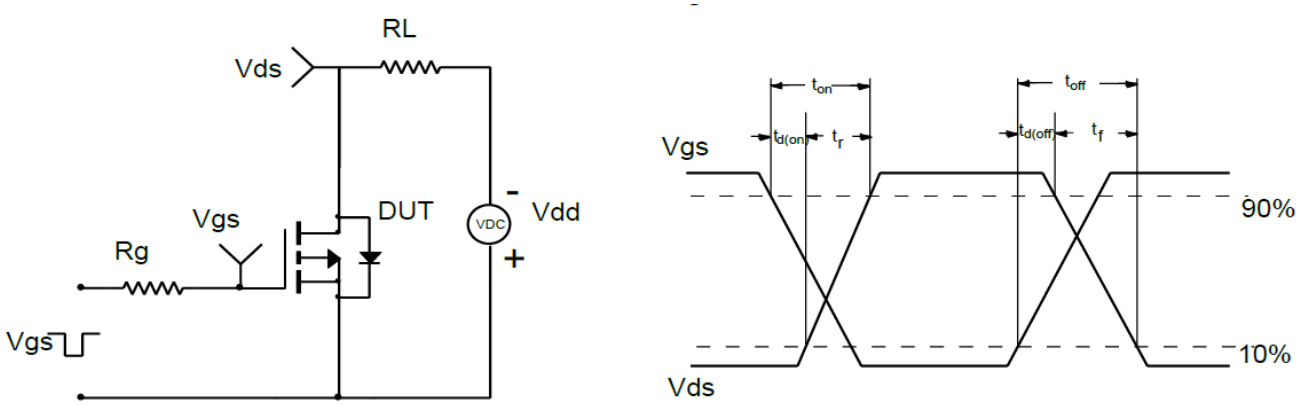


$Z_{thJC}=f(t_p)$; parameter: D

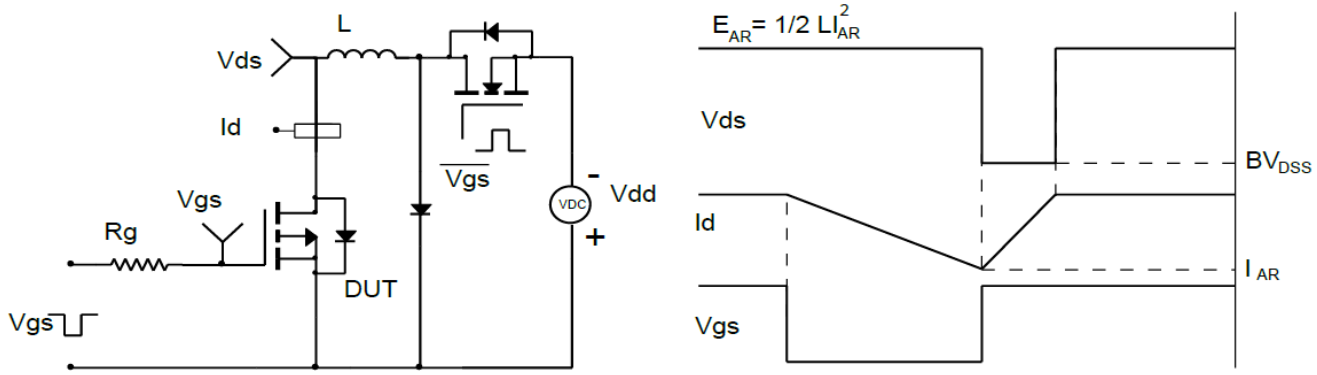
Test Circuit & Waveform



Gate Charge Test Circuit & Waveform

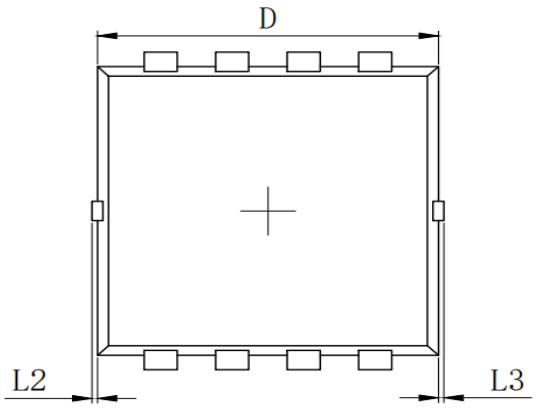


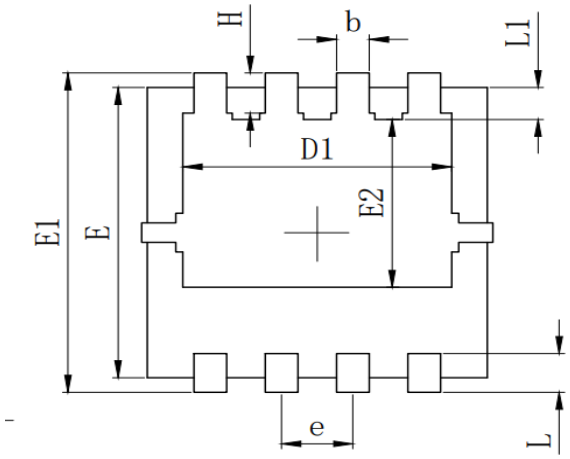
Resistive Switching Test Circuit & Waveforms

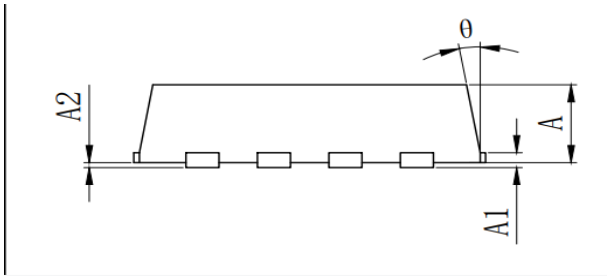


Unclamped Inductive Switching Test Circuit & Waveforms

Package Outline







Symbol	MILLIMETER		
	Min	Nom	Max
A	0.700	0.800	0.900
A1	0.152 REF		
A2	0~0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.535	1.735	1.935
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0~0.100		
L3	0~0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°

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