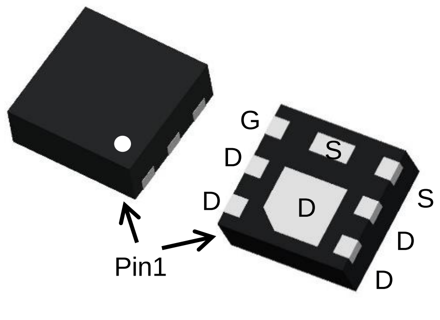
KS0320UA2

Single P-Channel Advanced Power MOSFET

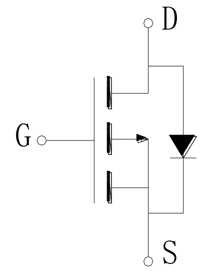
Features

- -16V/-12A,
  $R_{DS\ (ON)}$ =10mΩ(Typ.)@V_{GS}=-4.5V
  $R_{DS\ (ON)}$ =14mΩ(Typ.)@V_{GS}=-2.5V
- Low $R_{DS\ (ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

Pin Description



SDFN2020



Single P-Channel MOSFET

Applications

- Load Switch
- PWM Applications
- Power Management

RoHS Pb HF Halogen-Free

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		-16	V
V_{GSS}	Gate-Source Voltage		±10	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_A=25°C	-2.6	A
Mounted on Large Heat Sink				
I_{DP}①	300μs Pulse Drain Current Tested	T_A=25°C	-48	A
I_D②	Continuous Drain Current(V_{GS}=-4.5V)	T_A=25°C	-12	A
		T_A=70°C	-9.6	
P_D	Maximum Power Dissipation	T_A=25°C	2.5	W
		T_A=70°C	1.6	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		4	°C/W
$R_{\theta JA}$③	Thermal Resistance-Junction to Ambient		50	°C/W
Drain-Source Avalanche Ratings				
E_{AS}④	Avalanche Energy, Single Pulsed		TBD	mJ

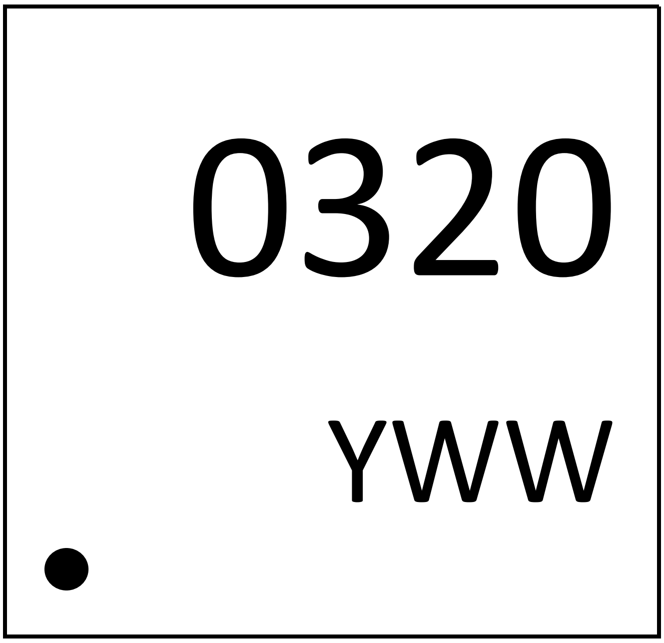
Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition		KS0320UA2			Unit
				Min.	Typ.	Max.	
Static Characteristics							
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250µA		-16	-18		V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-12V, V_{GS}=0V				-1	µA
			T_J=125°C			-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250µA		-0.4	-0.7	-1.1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±10V, V_{DS}=0V				±100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	V_{GS}=-4.5V, I_{DS}=-8A			10	16	mΩ
		V_{GS}=-2.5V, I_{DS}=-6A			14	22	mΩ
Diode Characteristics							
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=-8A, V_{GS}=0V			-0.85	-1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=-8A, dI_{SD}/dt=-100A/µs			15		ns
Q_{rr}	Reverse Recovery Charge				36		nC
Dynamic Characteristics⑥							
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz			1.2		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-8V, Frequency=1.0MHz			1890		pF
C_{oss}	Output Capacitance				265		
C_{rss}	Reverse Transfer Capacitance				180		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-8V, I_{DS}=-8A, V_{GEN}=-4.5V,R_G=3Ω			11		ns
t_r	Turn-on Rise Time				18		
$t_{d(OFF)}$	Turn-off Delay Time				32		
t_f	Turn-off Fall Time				25		
Gate Charge Characteristics⑥							
Q_g	Total Gate Charge	V_{DS}=-8V, V_{GS}=-4.5V, I_{DS}=-8A			18		nC
Q_{gs}	Gate-Source Charge				3		
Q_{gd}	Gate-Drain Charge				6		

Notes:
①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.
③When mounted on 1 inch square copper board, t⩽10sec. The value in any given application depends on the user's specific board design.
④Limited by $T_{Jmax.}$ Starting T_J = 25°C.
⑤Pulse test;Pulse width⩽300µs, duty cycle⩽2%.
⑥Guaranteed by design, not subject to production testing.

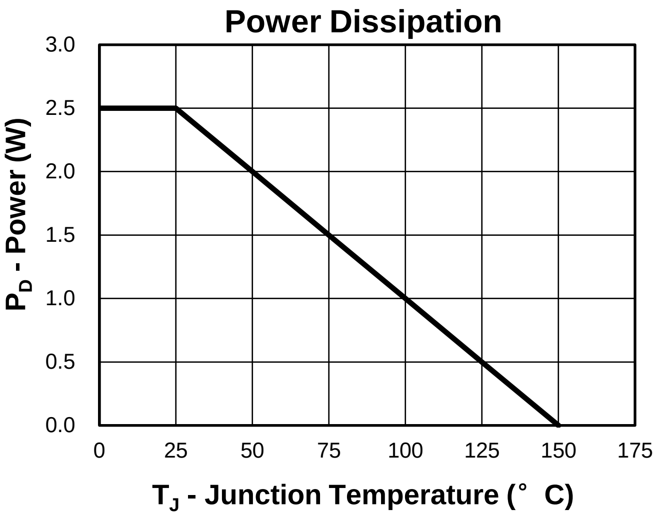
Ordering and Marking Information

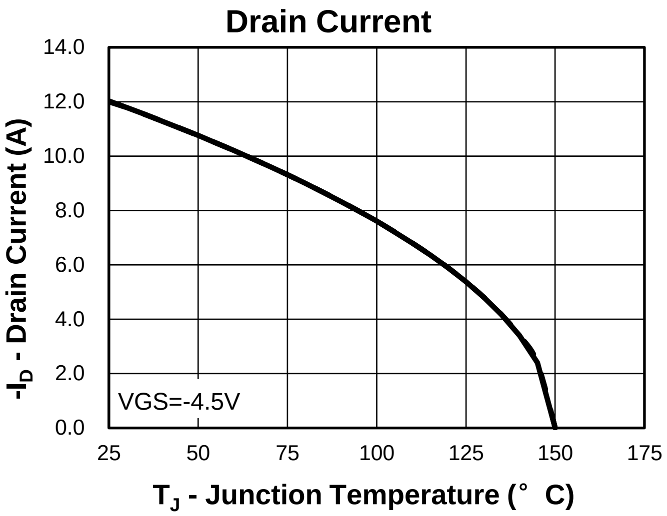
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS0320UA2	SDFN2020	Tape&Reel	3000	7’’	8mm

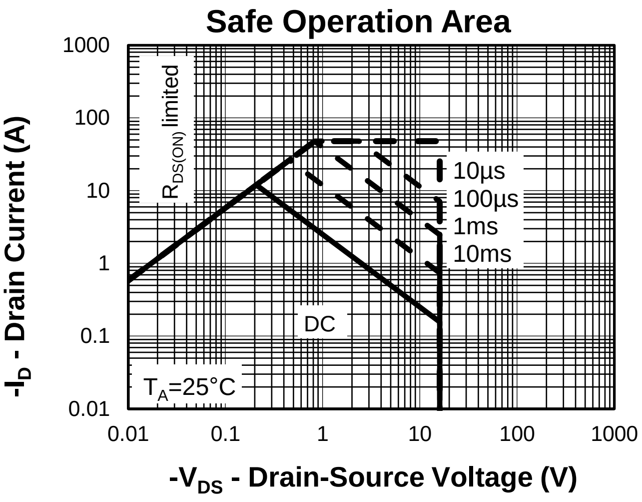


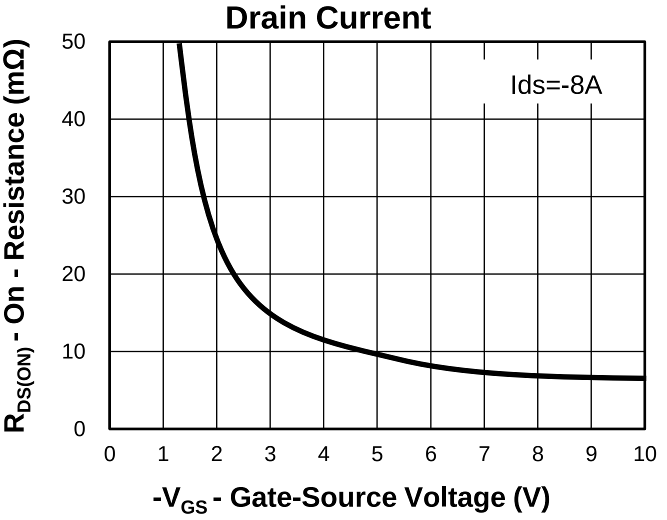
Y =Year,2017-A,2018-B,etc.
WW =Week.

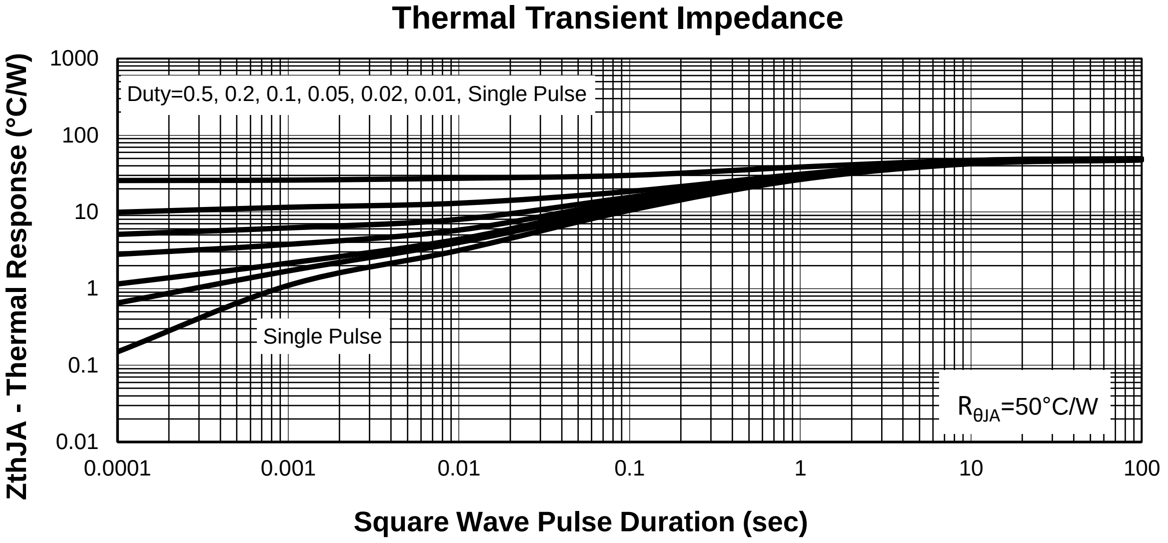
Typical Characteristics











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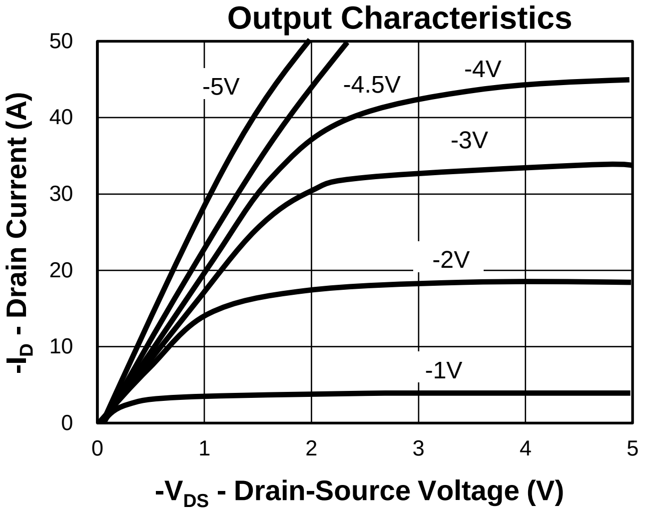
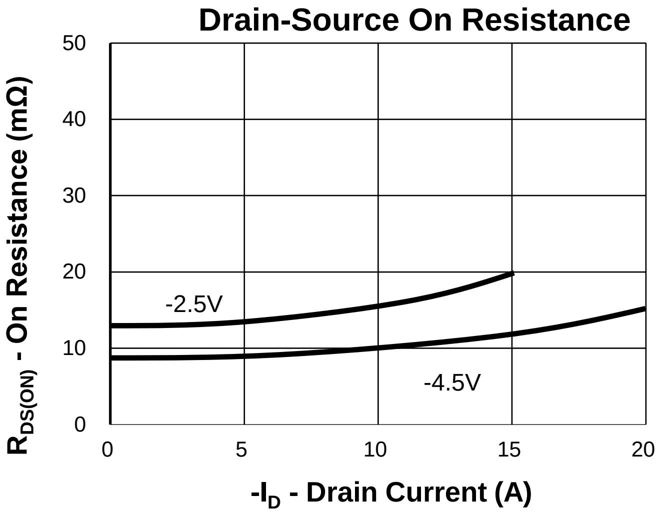
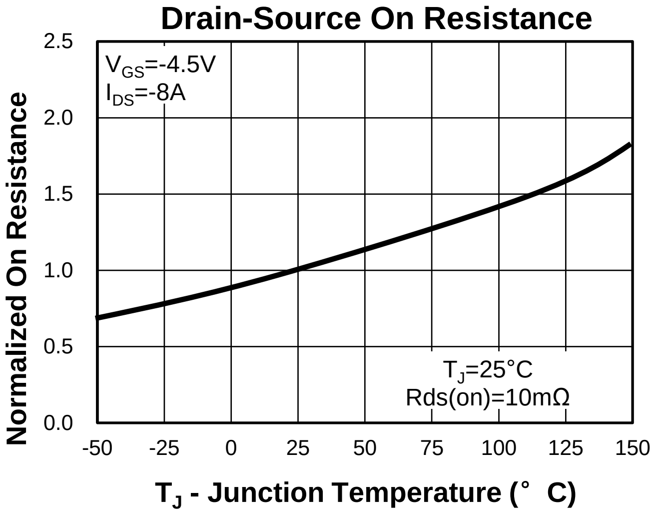
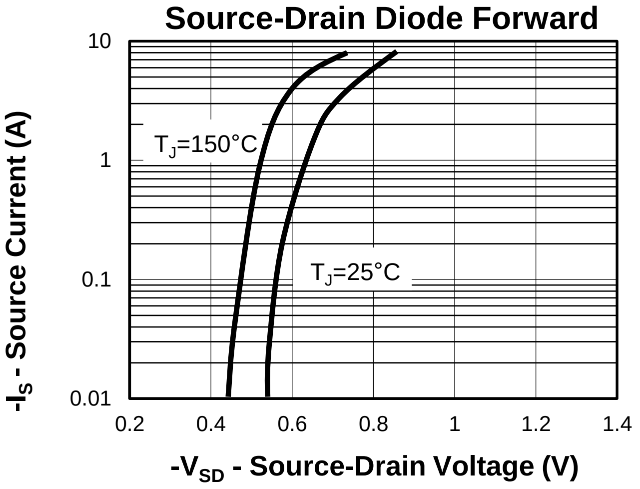
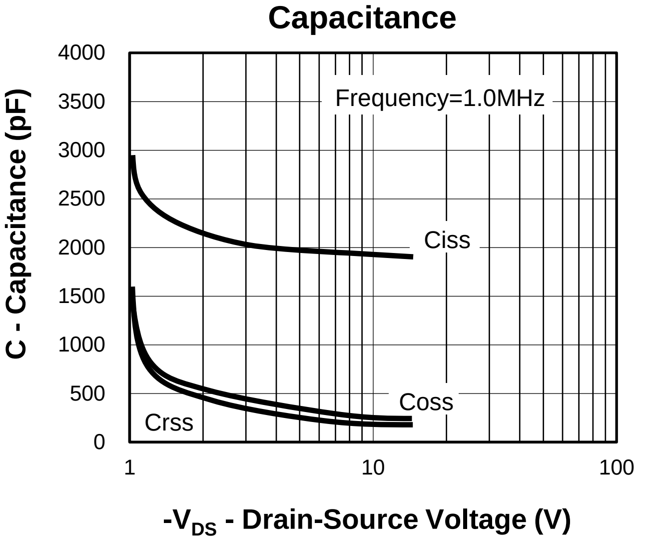
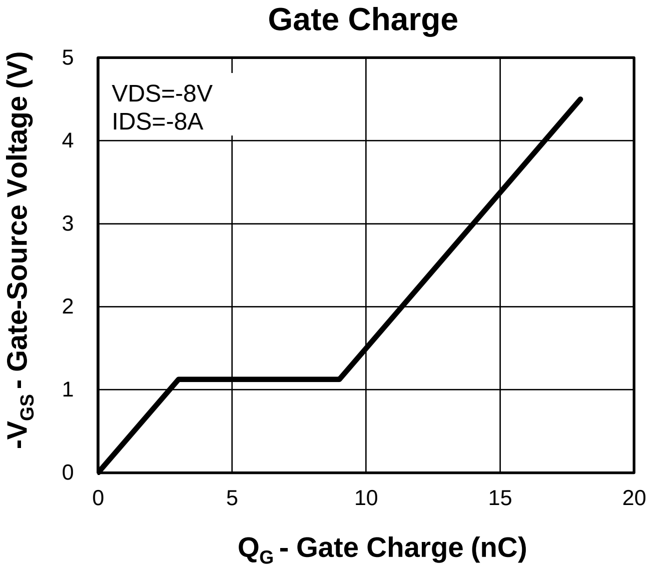






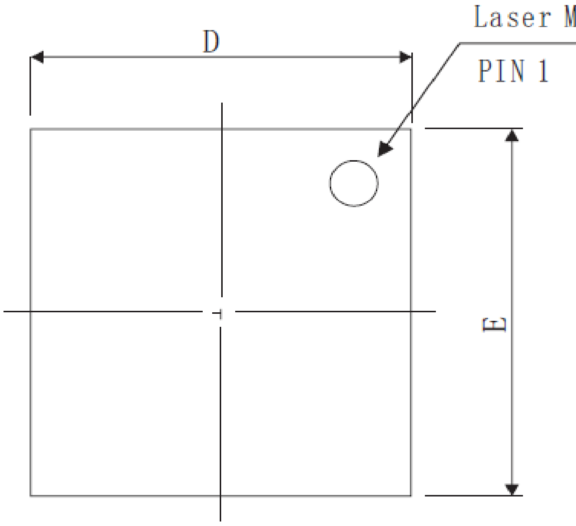




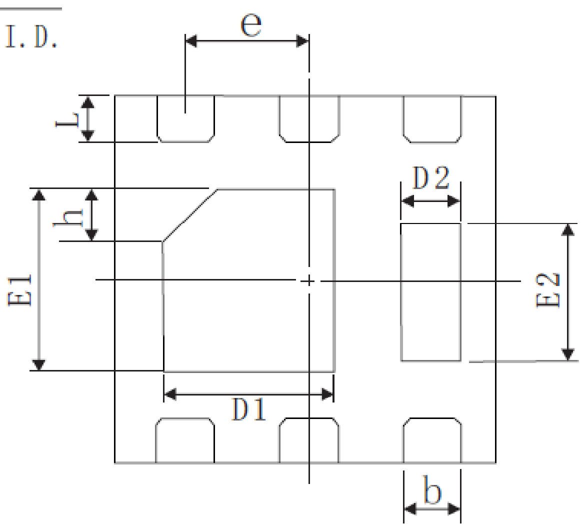


Package Information

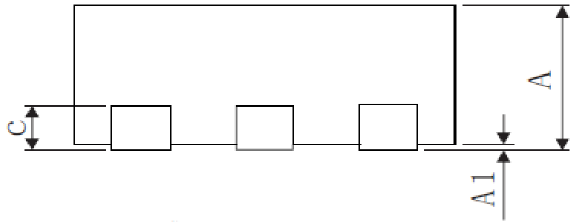
SDFN2020



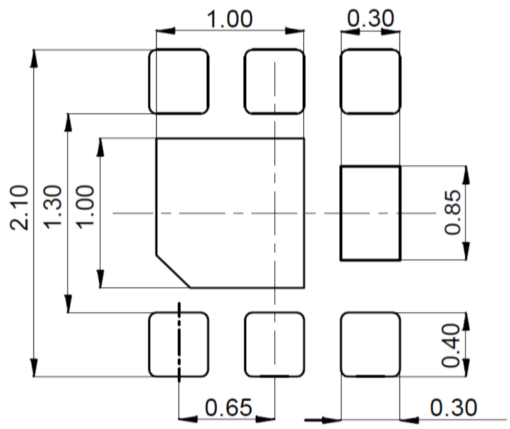
TOP VIEW



BOTTOM VIEW



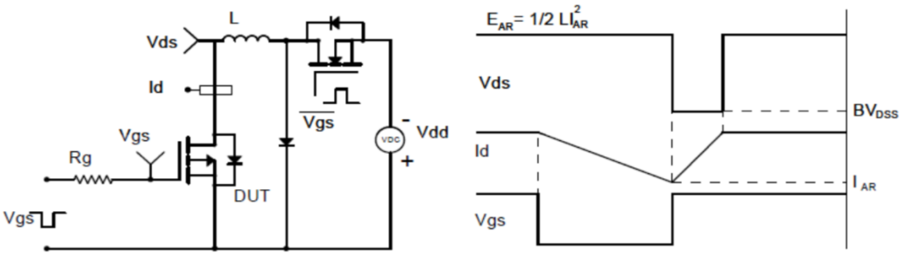
SIDE VIEW



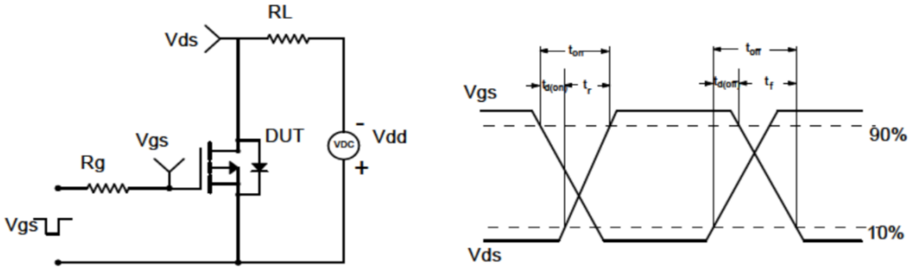
Land Pattern
(Only for Reference)

SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.750	0.800	0.028	0.030	0.031
A1	0.000	0.020	0.050	0.000	0.001	0.002
b	0.200	0.250	0.300	0.008	0.010	0.012
c		0.203 REF			0.008 REF	
D	1.950	2.000	2.070	0.077	0.079	0.081
D1	0.800	0.900	1.000	0.031	0.035	0.039
D2	0.200	0.300	0.400	0.008	0.012	0.016
E	1.950	2.000	2.070	0.077	0.079	0.081
E1	0.900	1.000	1.100	0.035	0.039	0.043
E2	0.650	0.750	0.850	0.026	0.030	0.033
e		0.65 BSC			0.026 BSC	
h	0.200	0.250	0.300	0.008	0.010	0.012
L	0.200	0.250	0.350	0.008	0.010	0.014

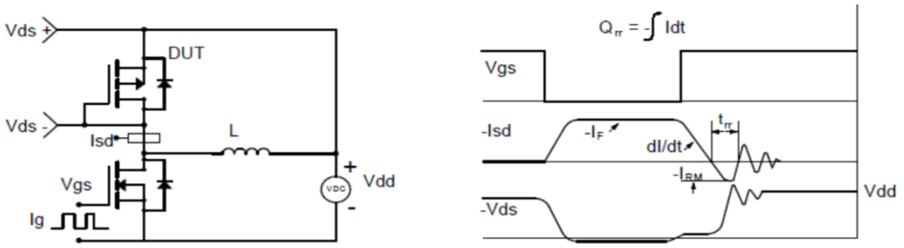
Avalanche Test Circuit and Waveforms



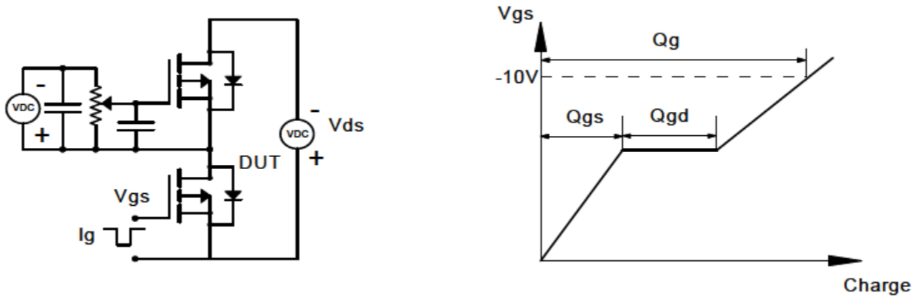
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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