

Features

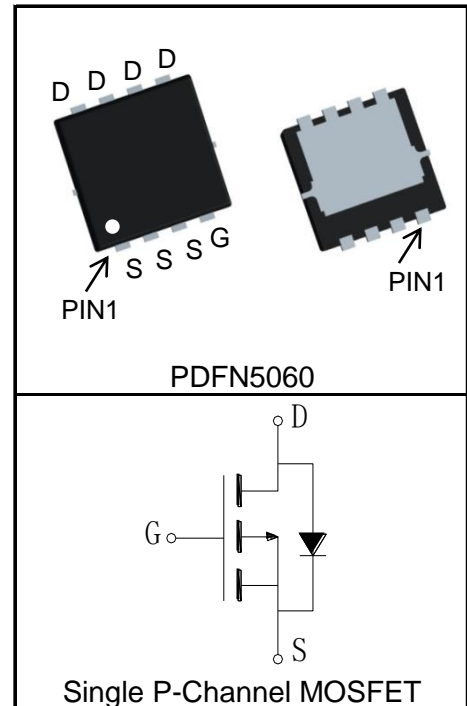
- -60V/-80A,
 $R_{DS(ON)} = 8m\Omega(Typ.)@V_{GS}=-10V$
 $R_{DS(ON)} = 10.5m\Omega(Typ.)@V_{GS}=-4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Fast Switching Speed
- 100% avalanche tested

Applications

- Switching Application Systems



Pin Description



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
Common Ratings ($T_C=25^\circ C$ Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage	-60	V	
V_{GSS}	Gate-Source Voltage	± 20		
T_J	Maximum Junction Temperature	150	$^\circ C$	
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$	
I_S	Diode Continuous Forward Current	$T_C=25^\circ C$	-80	A
Mounted on Large Heat Sink				
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ C$	-320	A
$I_D^{②}$	Continuous Drain Current@ $T_C(V_{GS}=-10V)$	$T_C=25^\circ C$	-80	A
		$T_C=100^\circ C$	-50	
	Continuous Drain Current@ $T_A(V_{GS}=-10V)^{③}$	$T_A=25^\circ C$	-14	
		$T_A=70^\circ C$	-11	
P_D	Maximum Power Dissipation@ T_C	$T_C=25^\circ C$	115	W
		$T_C=100^\circ C$	45	
	Maximum Power Dissipation@ $T_A^{③}$	$T_A=25^\circ C$	4.2	
		$T_A=70^\circ C$	2.7	

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.1	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient	30	°C/W
Drain-Source Avalanche Ratings			
E_{AS} ④	Avalanche Energy, Single Pulsed	56	mJ

Electrical Characteristics ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

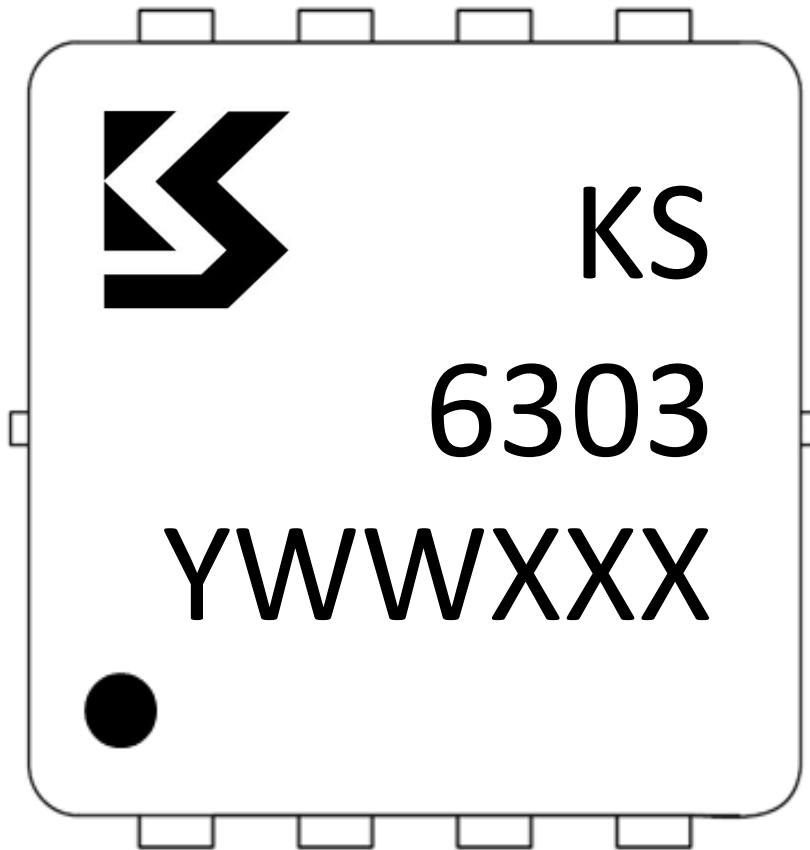
Symbol	Parameter	Test Condition	KS6303NA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-60			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-60V, V_{GS}=0V$			-1	μA
		$T_J=125^\circ\text{C}$			-30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.3	-1.8	-2.2	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	$V_{GS}=-10V, I_{DS}=-20A$		8	10	$m\Omega$
		$V_{GS}=-4.5V, I_{DS}=-16A$		10.5	13	$m\Omega$
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	$I_{SD}=-20A, V_{GS}=0V$		-0.85	-1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=-20A, di_{SD}/dt=100A/\mu s$		66		ns
Q_{rr}	Reverse Recovery Charge			163		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		14		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-30V,$ Frequency=1.0MHz		7000		μF
C_{oss}	Output Capacitance			460		
C_{riss}	Reverse Transfer Capacitance			275		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-30V, I_{DS}=-20A, V_{GS}=-10V, R_G=3\Omega$		59		ns
t_r	Turn-on Rise Time			46		
$t_{d(OFF)}$	Turn-off Delay Time			112		
t_f	Turn-off Fall Time			54		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	$V_{DS}=-30V, V_{GS}=-10V,$ $I_{DS}=-20A$		96		nC
Q_{gs}	Gate-Source Charge			19		
Q_{gd}	Gate-Drain Charge			27		

Notes:

- ①Pulse width limited by safe operating area.
- ②Calculated continuous current based on maximum allowable junction temperature. The package limitation current is -50A.
- ③When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
- ④Limited by T_{Jmax} , $I_{AS} = -15\text{A}$, $L = 0.5\text{mH}$, $V_{DD} = -30\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$.
- ⑤Pulse test; Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- ⑥Guaranteed by design, not subject to production testing.

Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS6303NA	PDFN5060	Tape&Reel	5000	13"	12mm

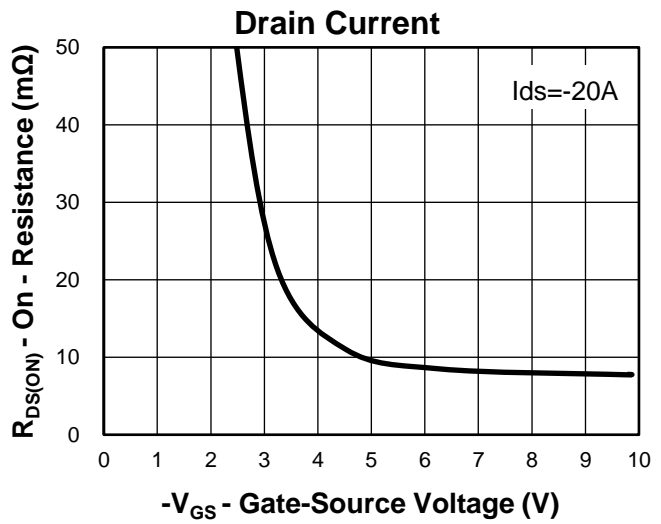
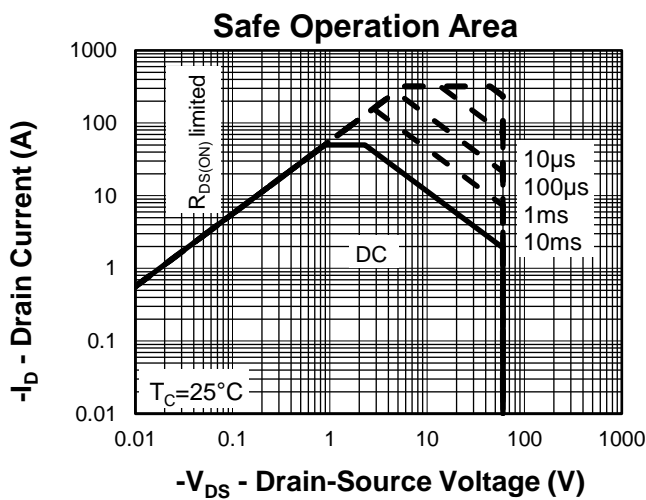
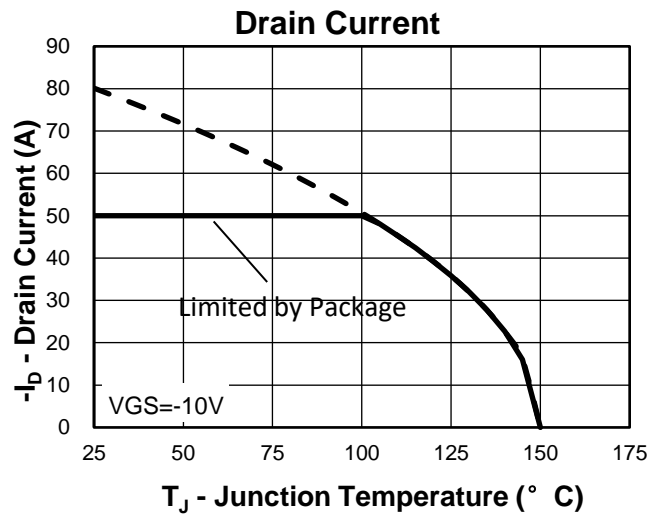
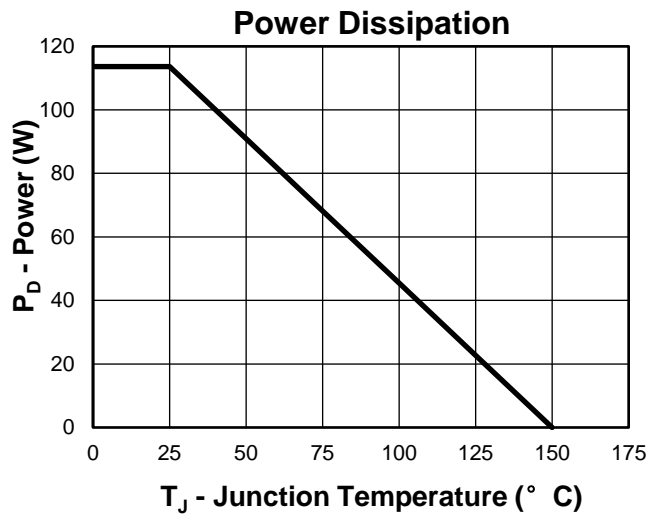


Y =Year,2017-A,2018-B,etc.

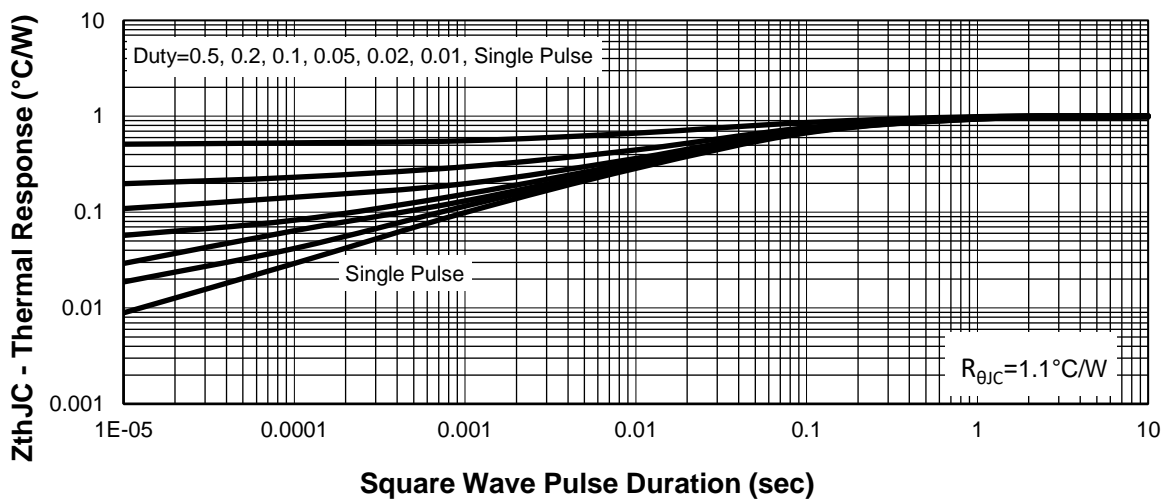
WW =Week.

XXX =Lot number.

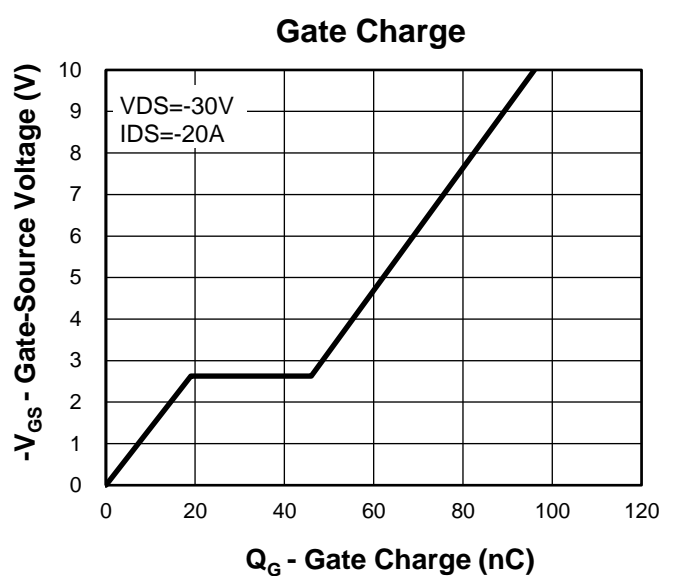
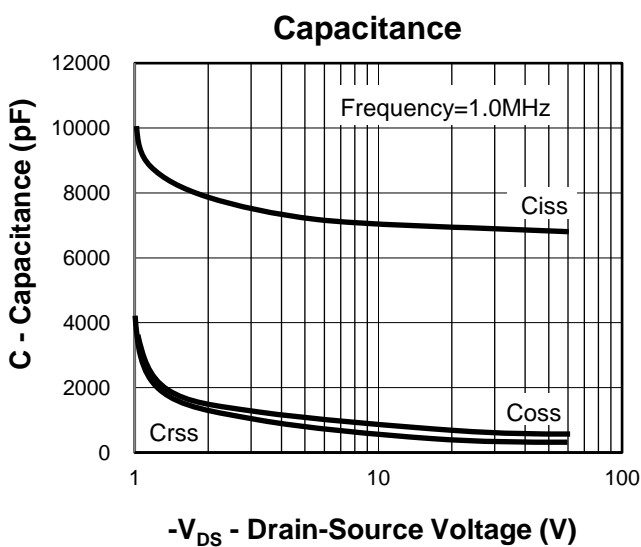
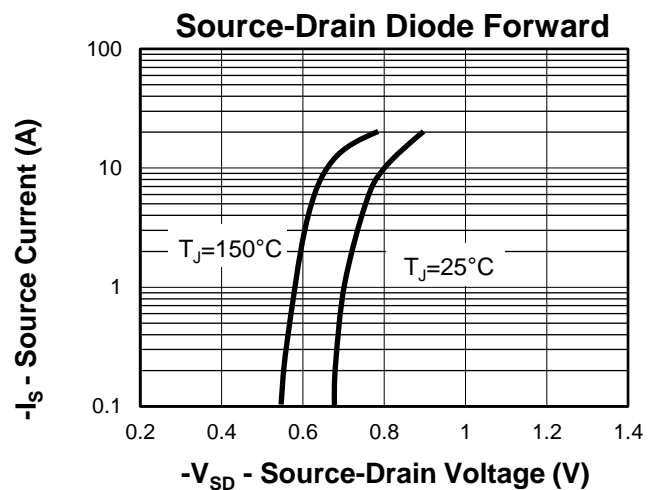
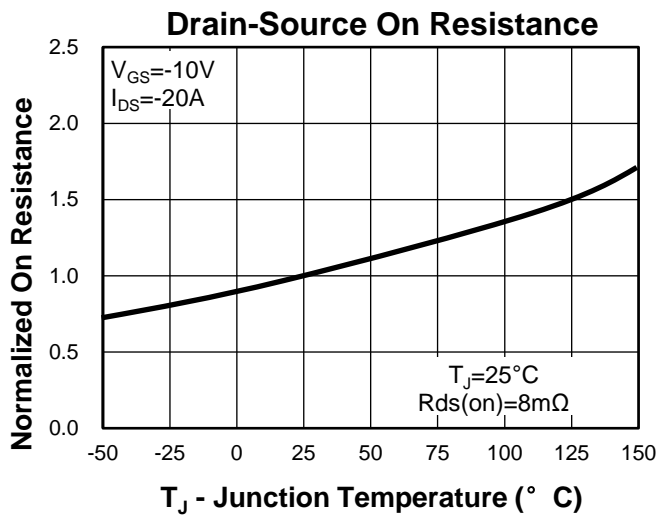
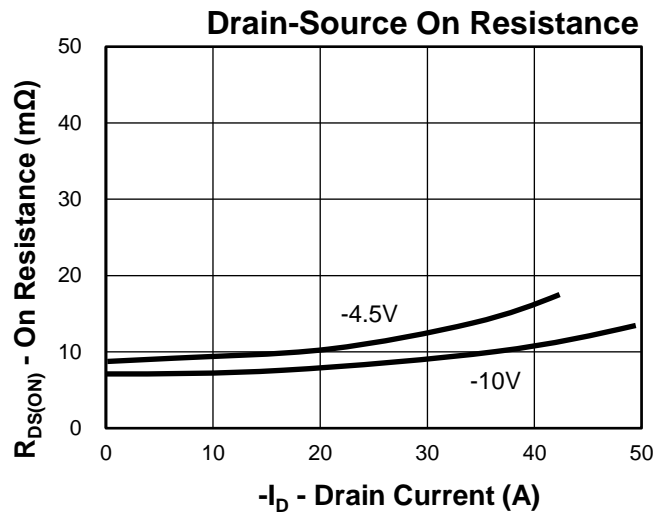
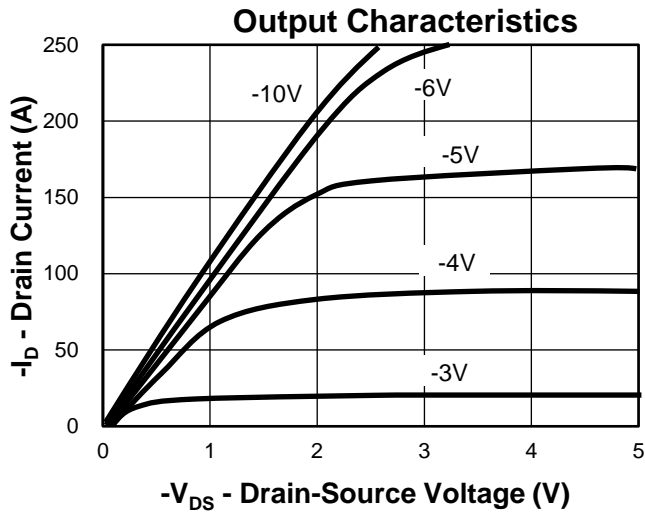
Typical Characteristics

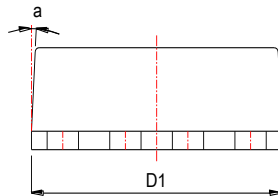
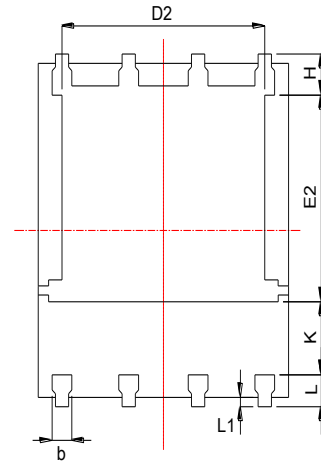
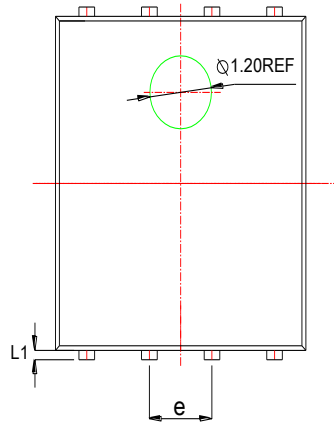
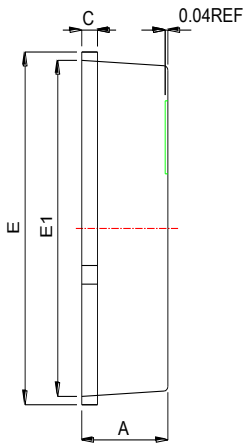


Thermal Transient Impedance

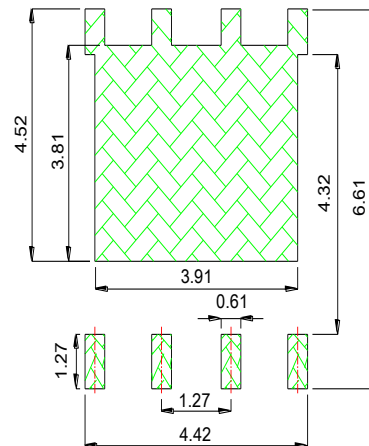


Typical Characteristics



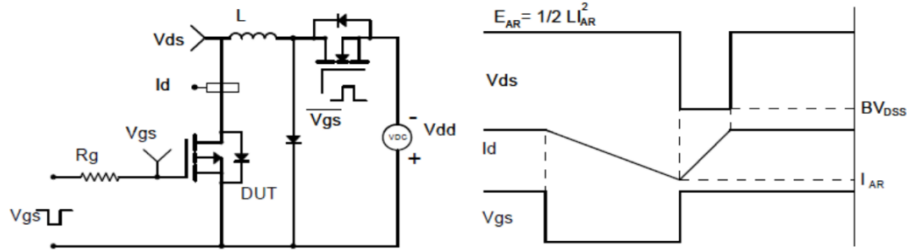
Package Information
PDFN5060


Land Pattern
(Only for Reference)

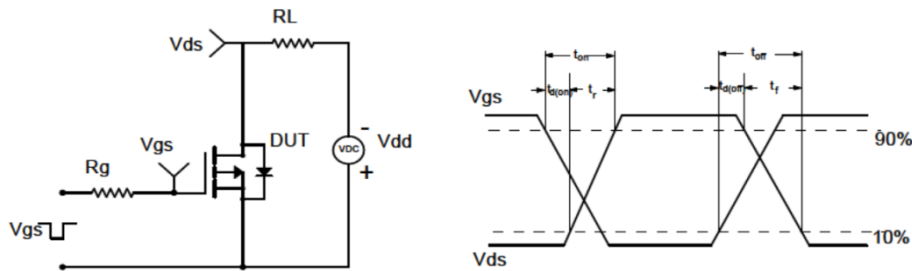


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	1.00	1.10	0.035	0.039	0.043
b	0.33	0.42	0.51	0.013	0.017	0.020
c	0.20	0.25	0.30	0.008	0.010	0.012
D1	4.80	4.90	5.00	0.189	0.193	0.197
D2	3.61	3.79	3.96	0.142	0.149	0.156
E	5.90	6.00	6.10	0.232	0.236	0.240
E1	5.65	5.75	5.85	0.222	0.226	0.230
E2	3.38	3.58	3.78	0.133	0.141	0.149
e	1.27 BSC			0.050 BSC		
H	0.41	0.51	0.61	0.016	0.020	0.024
k	1.10			0.043		
L	0.51	0.61	0.71	0.020	0.024	0.028
L1	0.06	0.13	0.20	0.002	0.005	0.008
a	0°		12°	0°		12°

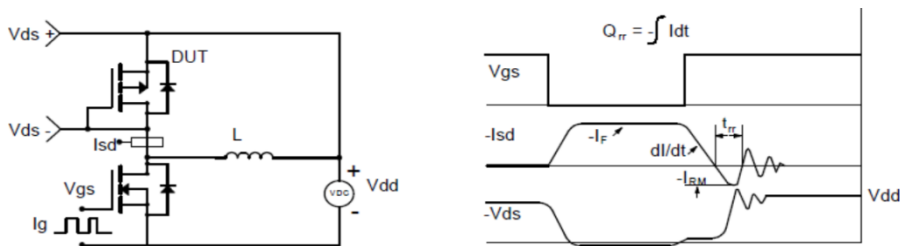
Avalanche Test Circuit and Waveforms



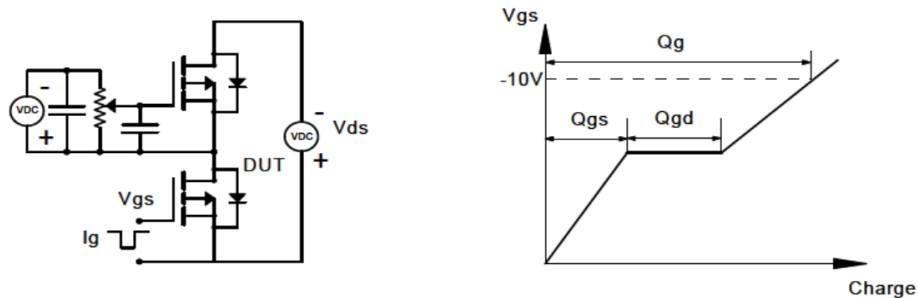
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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