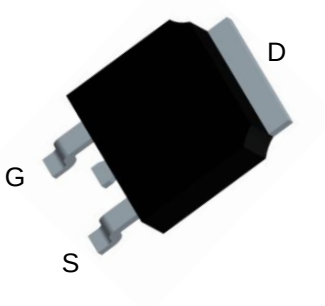
KS6214DA

Single N-Channel Advanced Power MOSFET

Features

- 60V/40A,
  $R_{DS(ON)}$ =16mΩ(Typ.)@V_{GS}=10V
  $R_{DS(ON)}$ =20mΩ(Typ.)@V_{GS}=4.5V
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

Pin Description



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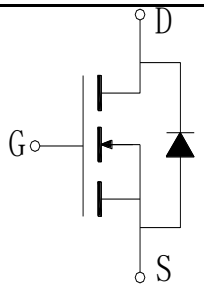


Single N-Channel MOSFET

Applications

- Power Switching Appliaction
- Load Switching

RoHS Pb HF Halogen-Free

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 to 175	°C
I_S	Diode Continuous Forward Current	T_C=25°C	40	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_C=25°C	160	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	40	A
		T_C=100°C	28	
P_D	Maximum Power Dissipation	T_C=25°C	50	W
		T_C=100°C	25	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		3	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		49	mJ

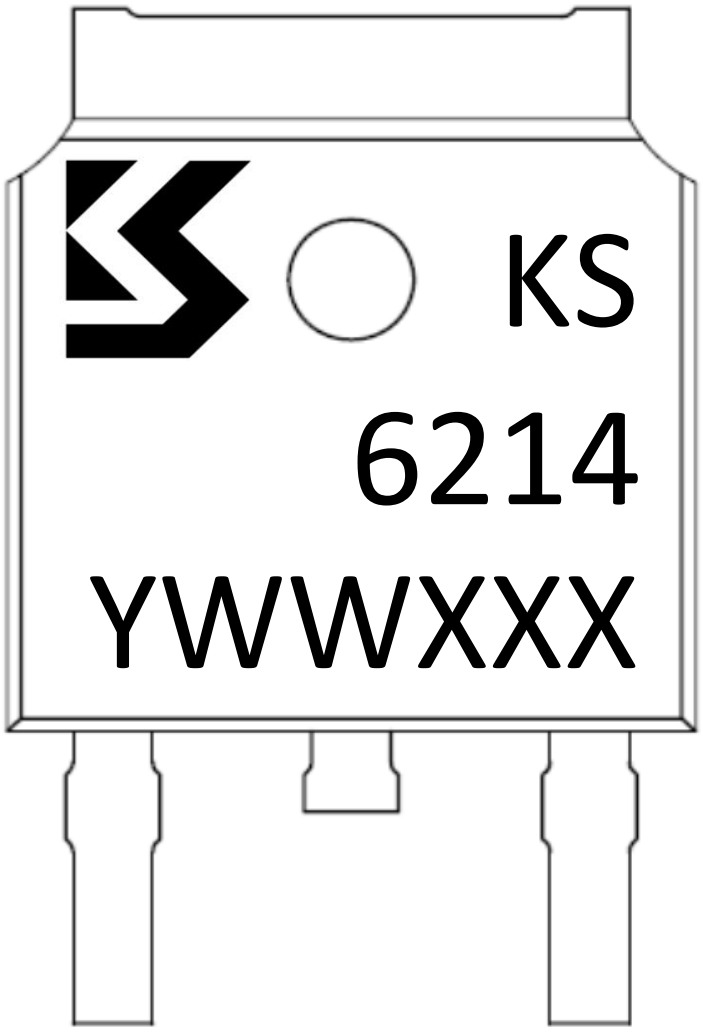
Electrical Characteristics (T_C=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS6214DA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	60			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V			1	μA
		T_J=125°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.1	1.6	2.3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=20A		16	20	mΩ
		V_{GS}=4.5V, I_{DS}=16A		20	25	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=20A, V_{GS}=0V		0.89	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=20A, dI_{SD}/dt=100A/μs		33		ns
Q_{rr}	Reverse Recovery Charge			47		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.2		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz		1310		pF
C_{oss}	Output Capacitance			125		
C_{rss}	Reverse Transfer Capacitance			80		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V, I_{DS}=20A, V_{GEN}=10V,R_G=6Ω		10		ns
t_r	Turn-on Rise Time			28		
$t_{d(OFF)}$	Turn-off Delay Time			25		
t_f	Turn-off Fall Time			12		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_{DS}=20A		33		nC
Q_{gs}	Gate-Source Charge			6		
Q_{gd}	Gate-Drain Charge			9		

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}, I_{AS} =14A, L=0.5mH, V_{DD} = 30V, R_G = 25Ω , Starting TJ = 25°C.
⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.
⑥Guaranteed by design, not subject to production testing.

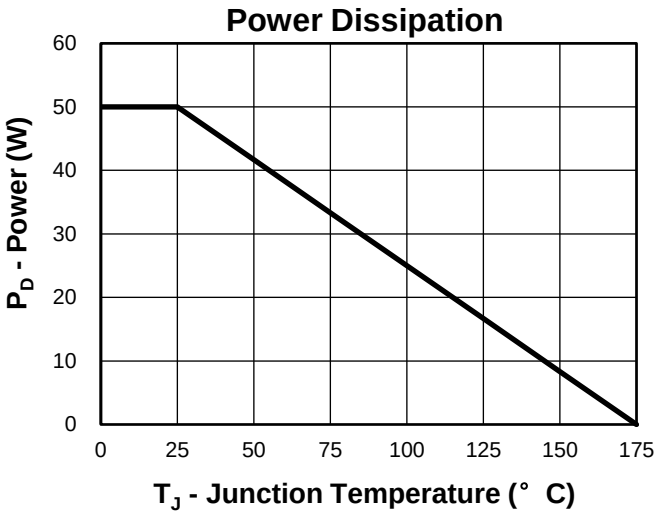
Ordering and Marking Information

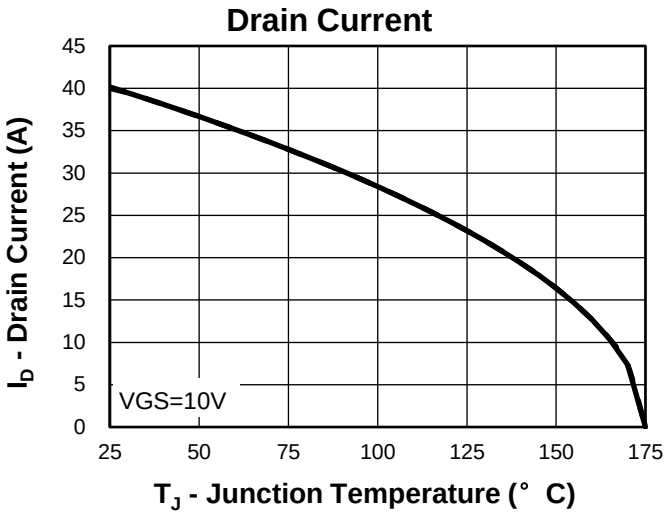
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS6214DA	TO-252	Tape&Reel	2500	13''	16mm

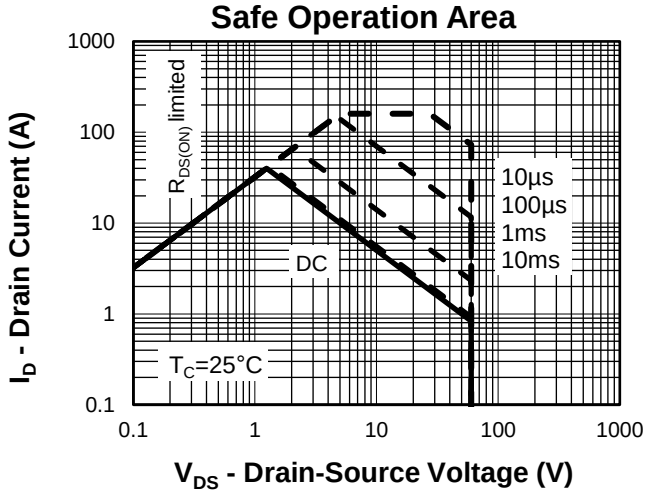


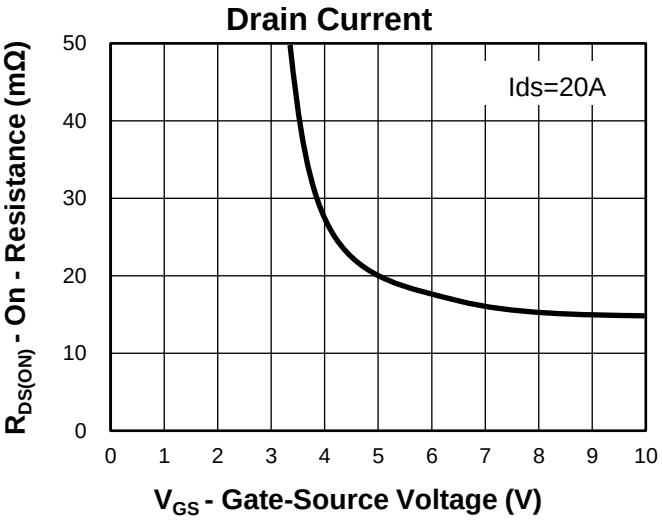
Y =Year,2017-A,2018-B,etc.
WW =Week.
XXX =Lot number.

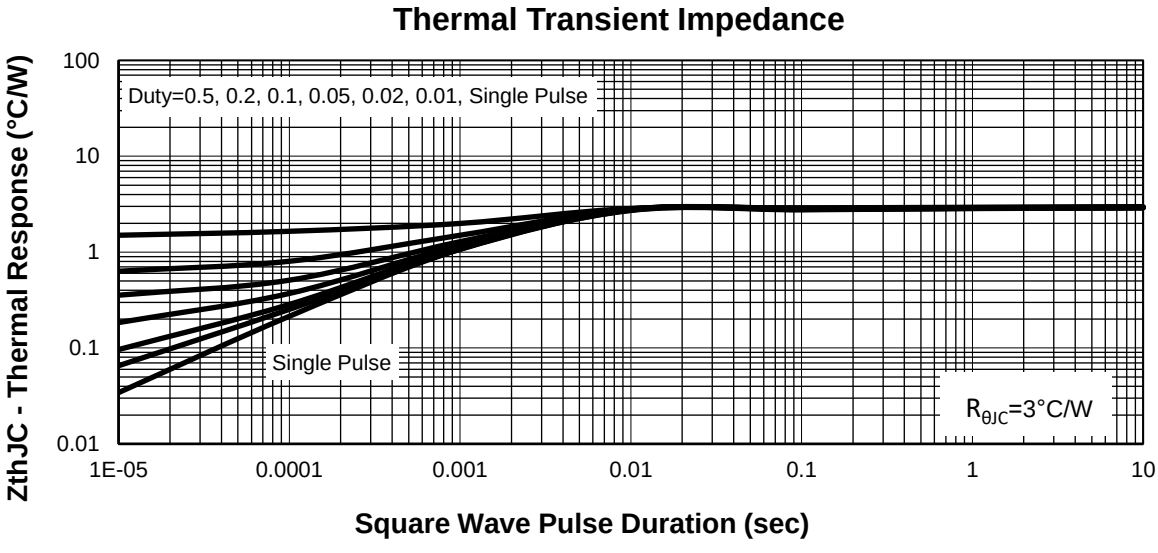
Typical Characteristics



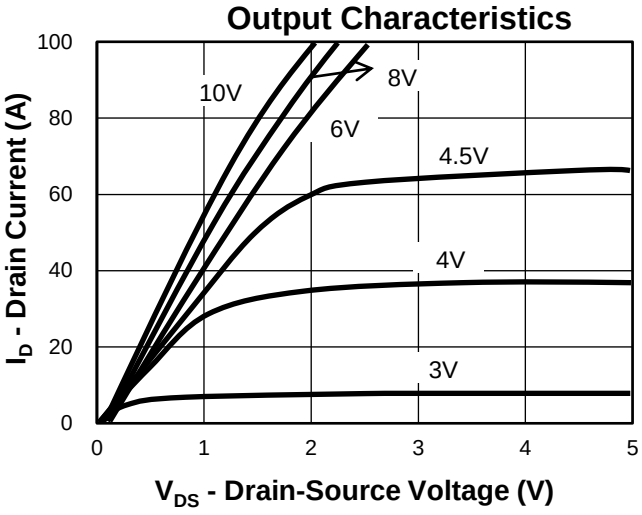


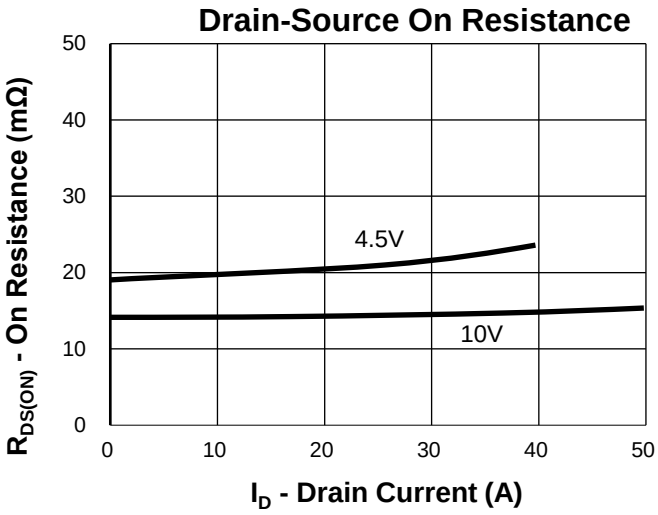


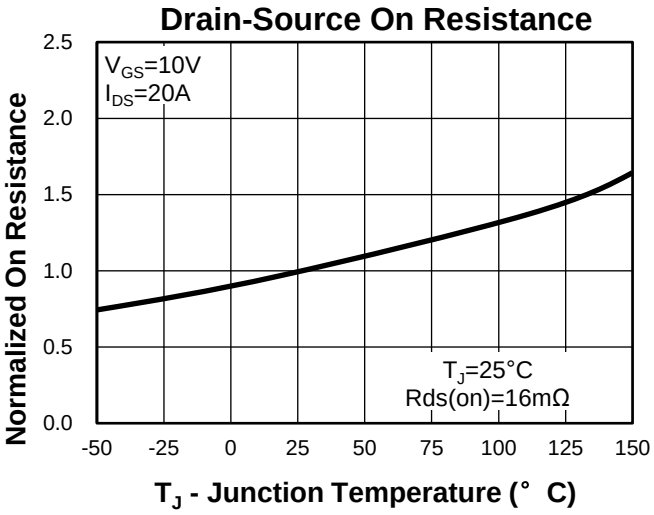


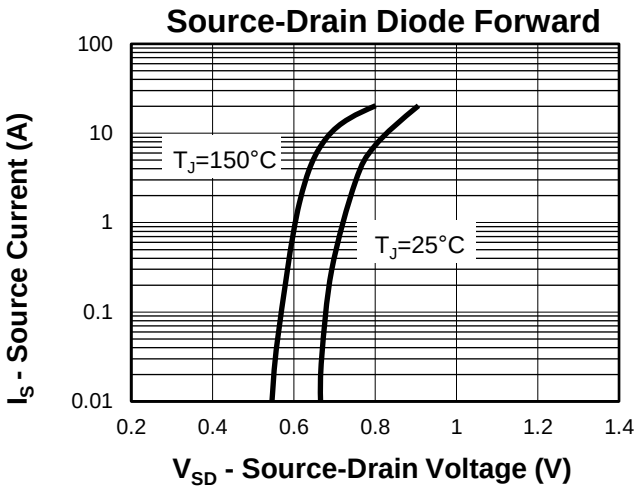


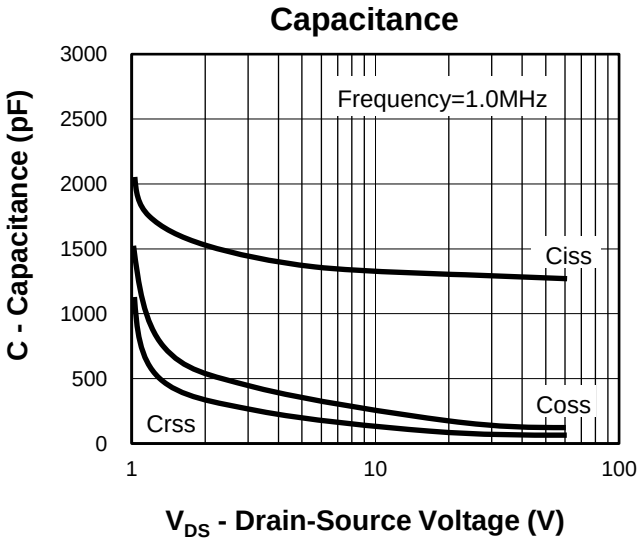
Typical Characteristics

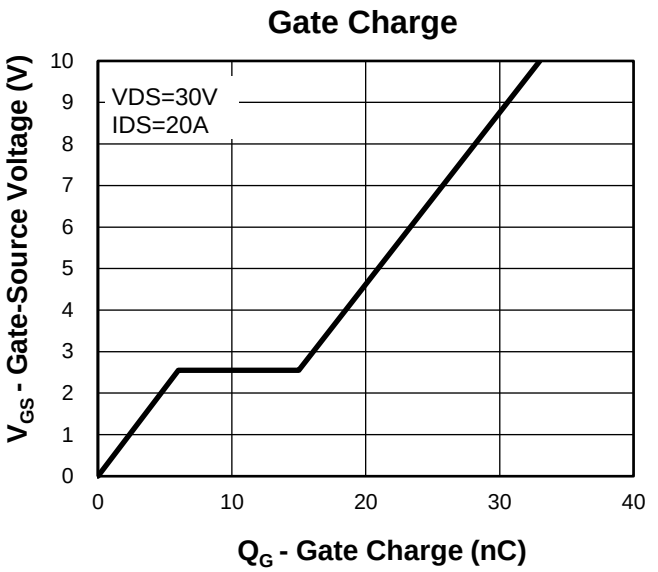












Package Information

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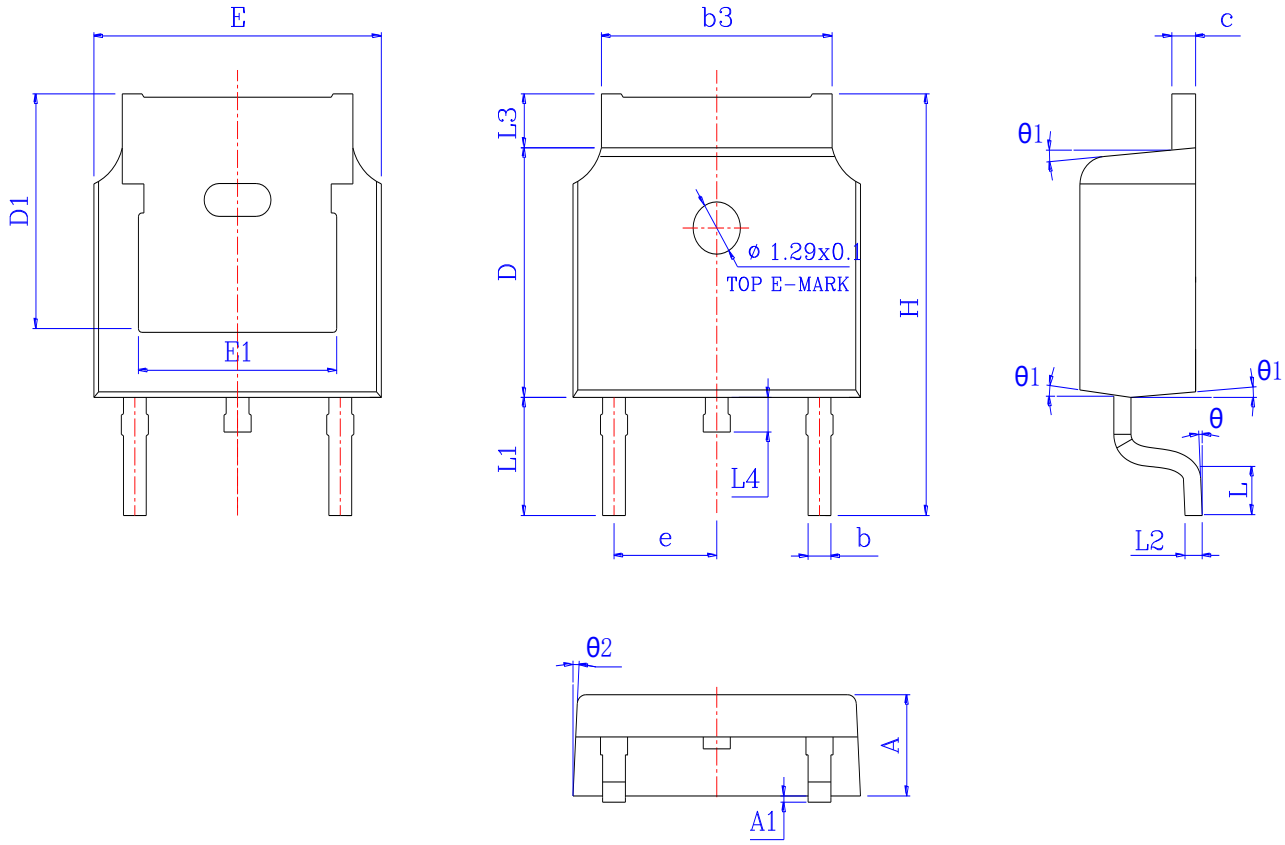
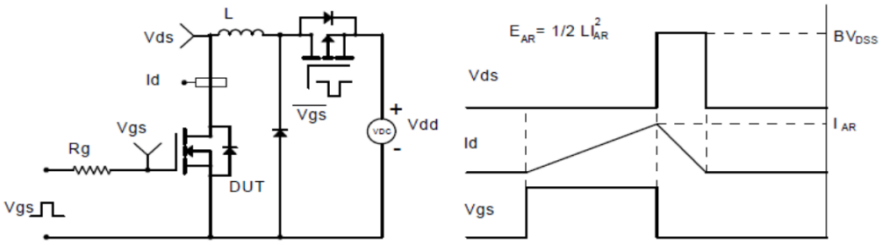
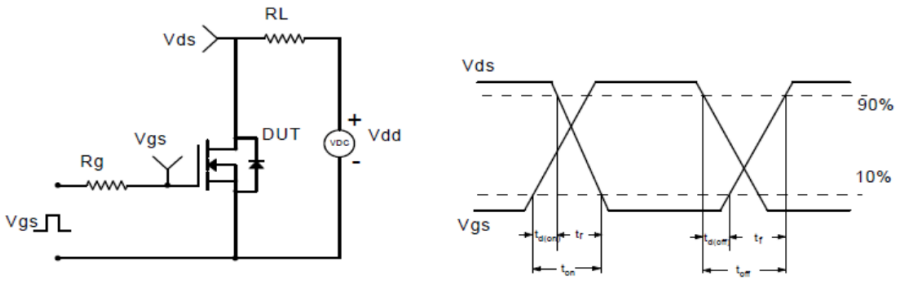


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.200	2.300	2.400	0.087	0.091	0.094
A1	*	*	0.100	*	*	0.004
b	0.660	0.760	0.860	0.026	0.030	0.034
b3	5.130	5.295	5.460	0.202	0.208	0.215
c	0.470	0.535	0.600	0.019	0.021	0.024
D	6.000	6.100	6.200	0.236	0.240	0.244
D1		5.30 REF			0.20 REF	
E	6.500	6.600	6.700	0.256	0.260	0.264
E1	4.700	4.810	4.920	0.185	0.189	0.194
e		2.28 REF			0.09 REF	
H	9.800	10.100	10.400	0.386	0.398	0.409
L	1.400	1.550	1.700	0.055	0.061	0.067
L1		2.743 REF			0.108 REF	
L2		0.510 BSC			0.020 BSC	
L3	0.900	1.075	1.250	0.035	0.042	0.049
L4	0.600	0.800	1.000	0.024	0.031	0.039
θ	0°	*	8°	0°	*	8°
θ1	5°	7°	9°	5°	7°	9°
θ2	5°	7°	9°	5°	7°	9°

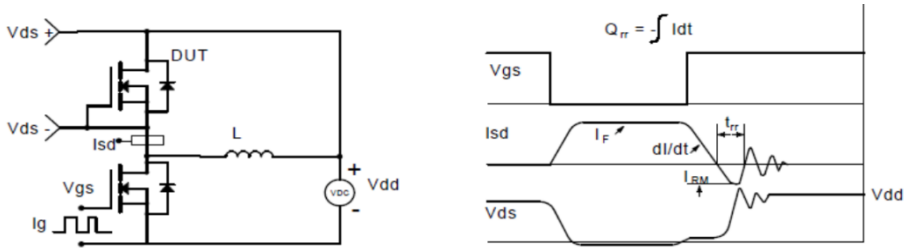
Avalanche Test Circuit and Waveforms



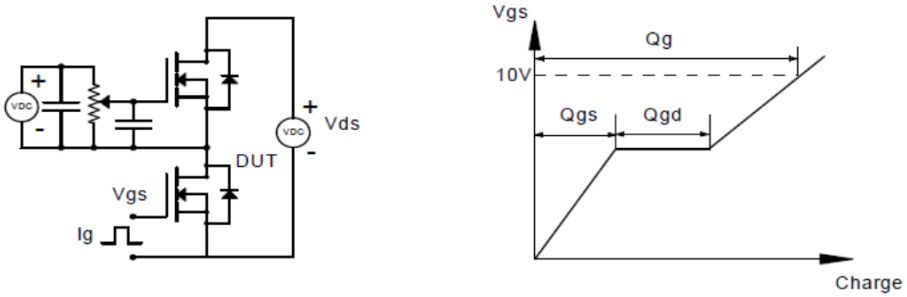
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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