

Features

- 20V/60A,
 $R_{DS(ON)} = 4.2m\Omega(Typ.)@V_{GS}=4.5V$
 $R_{DS(ON)} = 4.3m\Omega(Typ.)@V_{GS}=3.8V$
 $R_{DS(ON)} = 4.6m\Omega(Typ.)@V_{GS}=3.1V$
 $R_{DS(ON)} = 5m\Omega(Typ.)@V_{GS}=2.5V$
 $R_{DS(ON)} = 7.2m\Omega(Typ.)@V_{GS}=1.8V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- ESD Protected (HBM>2000V)

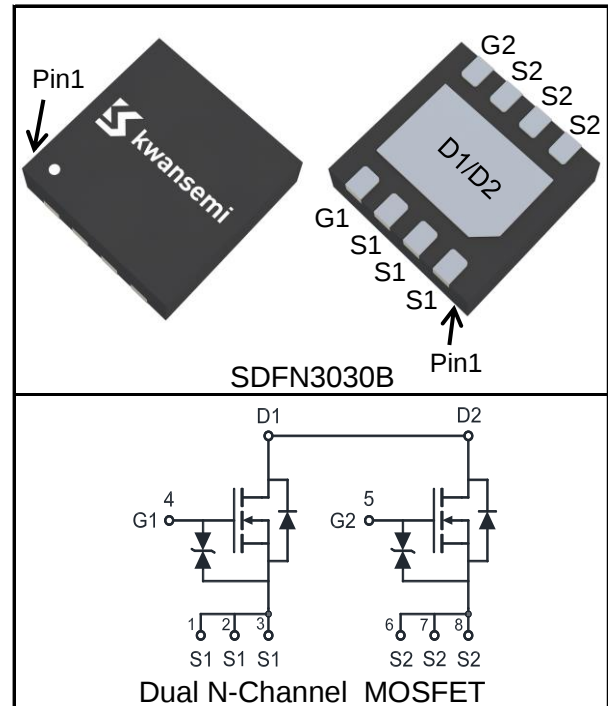
Applications

- Power Management
- Battery Protection



Halogen-Free

Pin Description



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^{\circ}C$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	± 10	V
T_J	Maximum Junction Temperature	150	$^{\circ}C$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 150	$^{\circ}C$
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}C$ 60	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	Pulse Drain Current	$T_C=25^{\circ}C$ 240	A
$I_D^{②}$	Continuous Drain Current@ $T_C(V_{GS}=4.5V)$	$T_C=25^{\circ}C$ 60	A
		$T_C=100^{\circ}C$ 37	
	Continuous Drain Current@ $T_A(V_{GS}=4.5V)^{③}$	$T_A=25^{\circ}C$ 20	
		$T_A=70^{\circ}C$ 16	
P_D	Maximum Power Dissipation@ T_C	$T_C=25^{\circ}C$ 29	W
		$T_C=100^{\circ}C$ 11	
	Maximum Power Dissipation@ $T_A^{③}$	$T_A=25^{\circ}C$ 3.6	
		$T_A=70^{\circ}C$ 2.3	

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	4.2	°C/W
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	35	°C/W
Drain-Source Avalanche Ratings			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	81	mJ

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

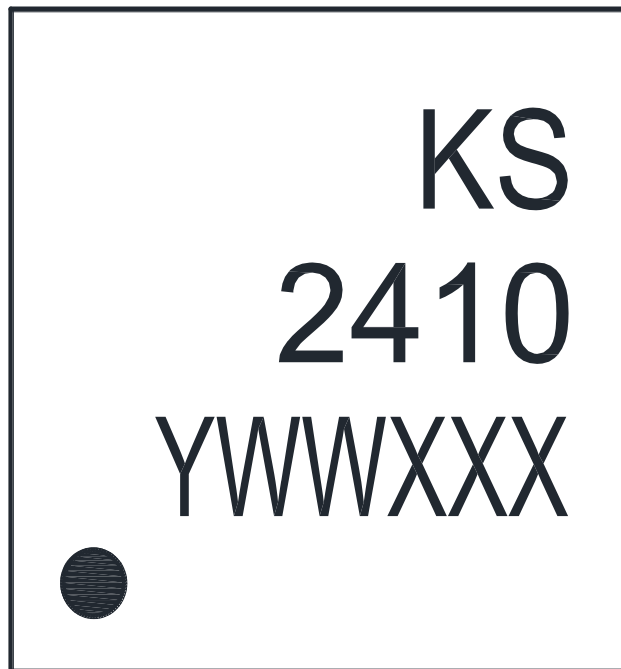
Symbol	Parameter	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.75	1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±10V, V _{DS} =0V			±10	μA
R _{DS(ON)} ⑤	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =3A	3.2	4.2	5.2	mΩ
		V _{GS} =3.8V, I _{DS} =3A	3.3	4.3	5.5	mΩ
		V _{GS} =3.1V, I _{DS} =3A	3.6	4.6	6.2	mΩ
		V _{GS} =2.5V, I _{DS} =3A	4	5	7	mΩ
		V _{GS} =1.8V, I _{DS} =3A	5	7.2	10	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =3A, V _{GS} =0V		0.74	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =3A, dI _{SD} /dt=100A/μs		20		ns
Q _{rr}	Reverse Recovery Charge			24		nC
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		3.1		KΩ
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1KHz		2890		pF
C _{oss}	Output Capacitance			260		
C _{rss}	Reverse Transfer Capacitance			230		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, I _{DS} =3A, V _{GS} =4,5V, R _G =6Ω		11		ns
t _r	Turn-on Rise Time			10		
t _{d(OFF)}	Turn-off Delay Time			27		
t _f	Turn-off Fall Time			10		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4,5V, I _{DS} =3A		29		nC
Q _{gs}	Gate-Source Charge			5.9		
Q _{gd}	Gate-Drain Charge			7.1		

Notes:

- ①Pulse width limited by safe operating area.
- ②Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 40A.
- ③When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
- ④Limited by T_{Jmax} , Starting $T_J = 25^\circ\text{C}$, $I_{ASmax} = 18\text{A}$, $L = 0.5\text{mH}$, $V_{DD} = 20\text{V}$, $R_G = 25\Omega$, $V_{GS} = 4.5\text{V}$. Part not recommended for use above this value.
- ⑤Pulse test; Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- ⑥Guaranteed by design, not subject to production testing.

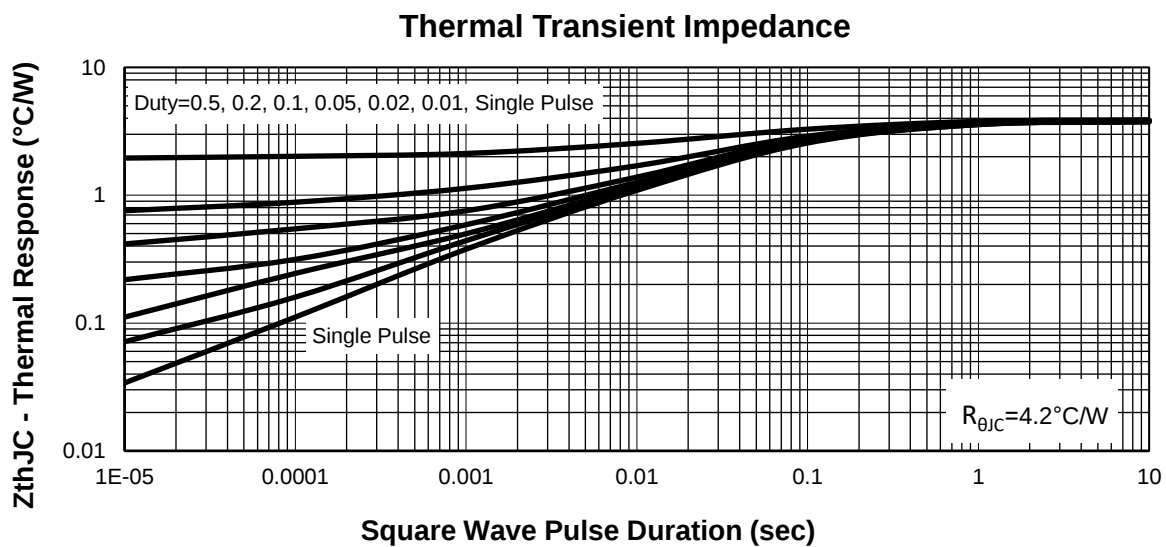
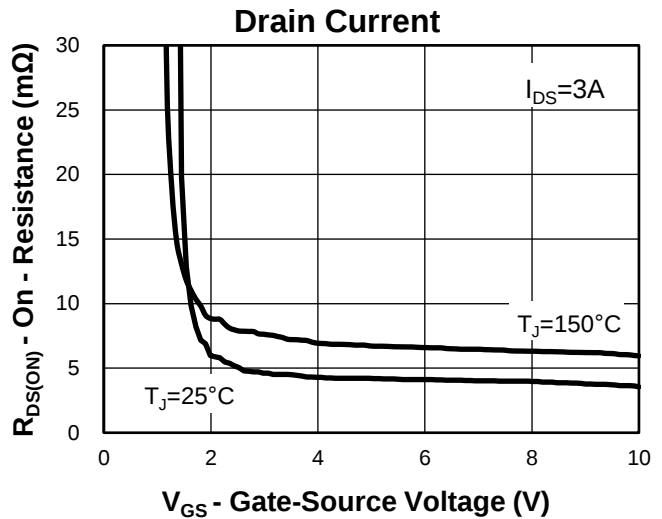
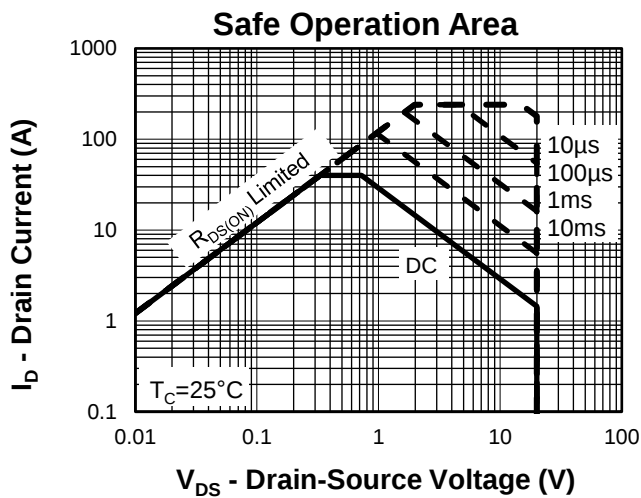
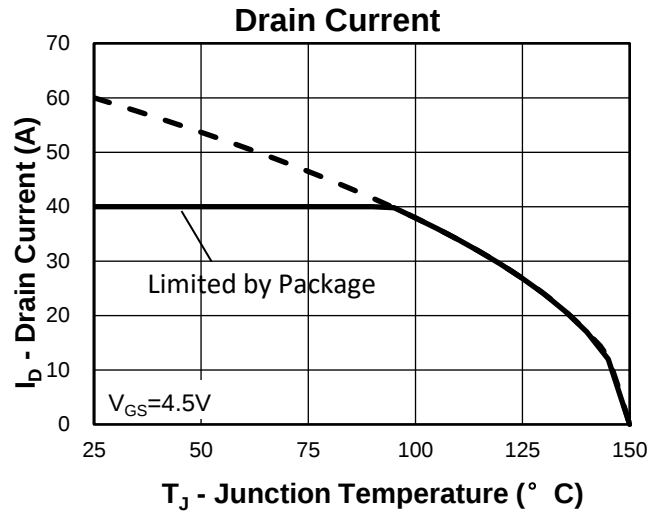
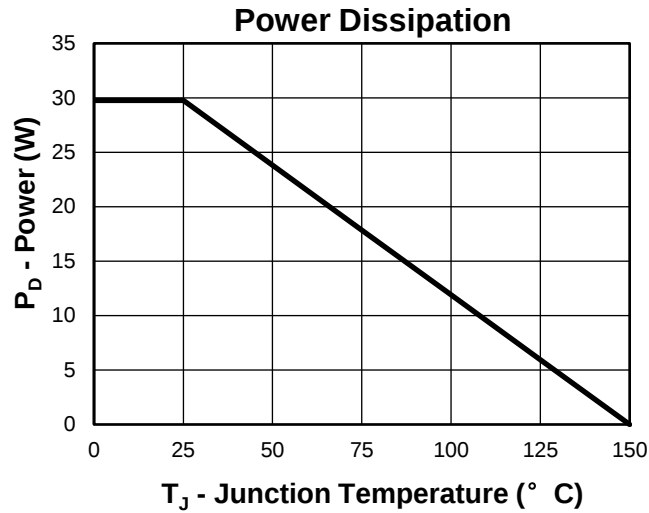
Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS2410UA3	SDFN3030B	Tape&Reel	5000	13"	12mm

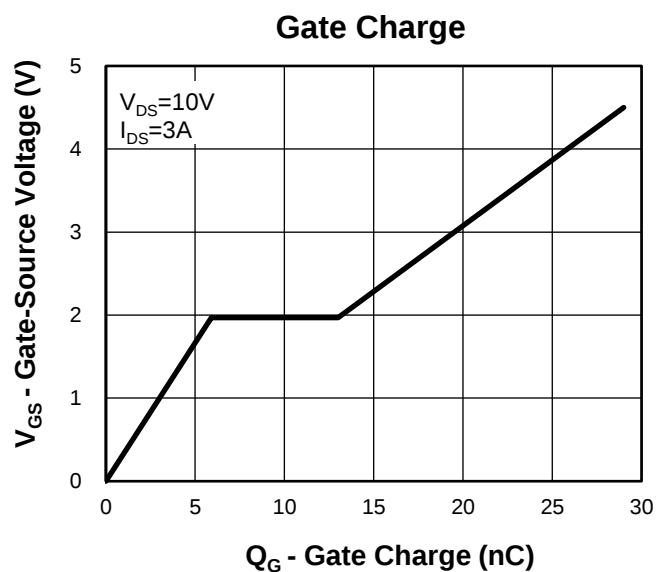
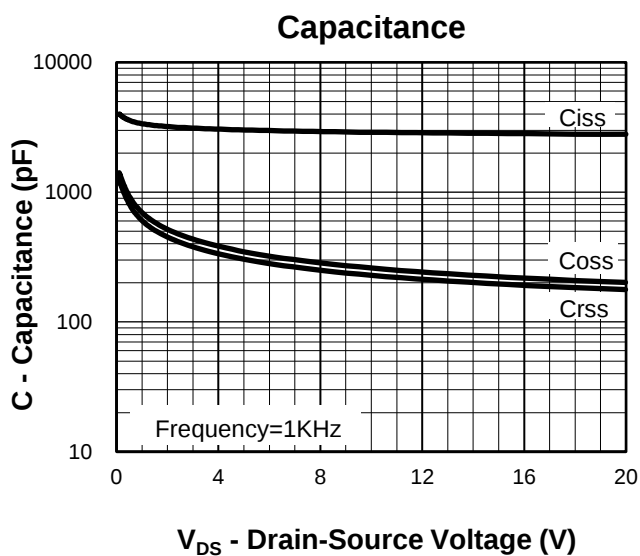
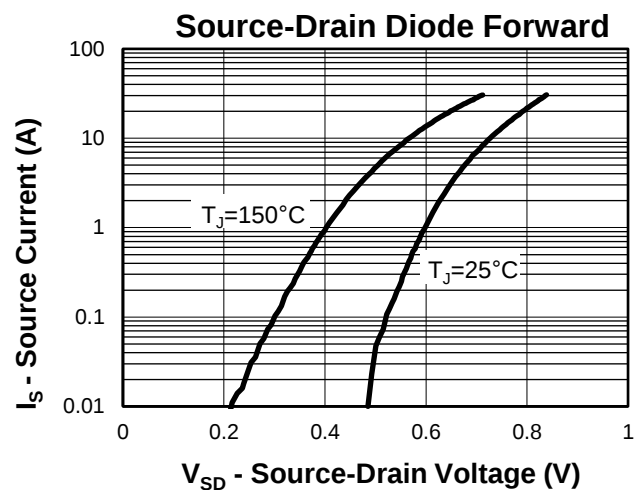
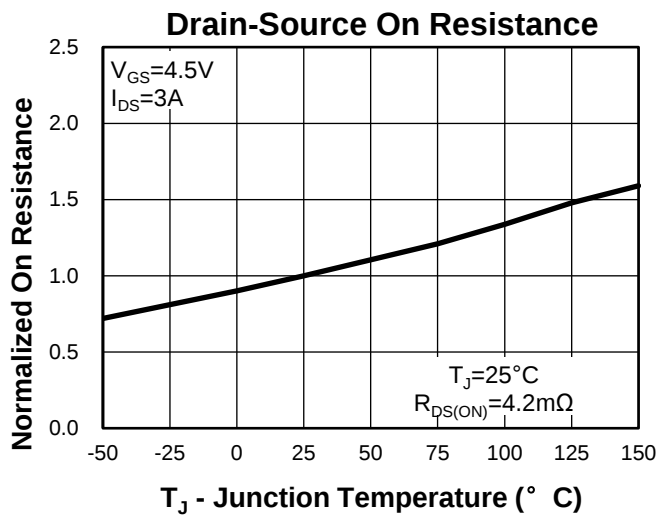
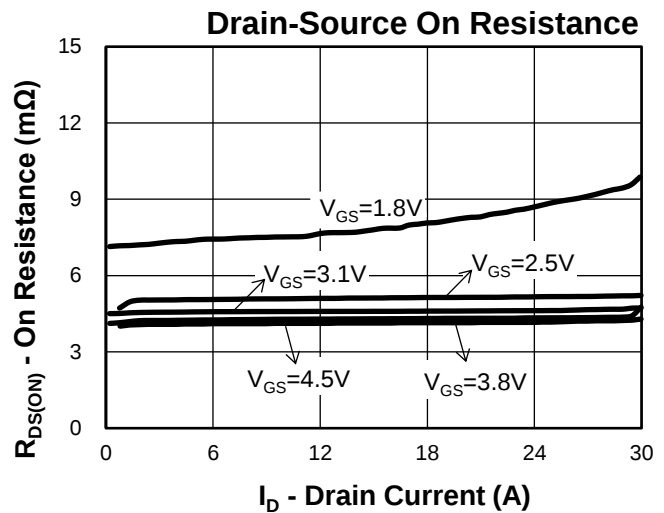
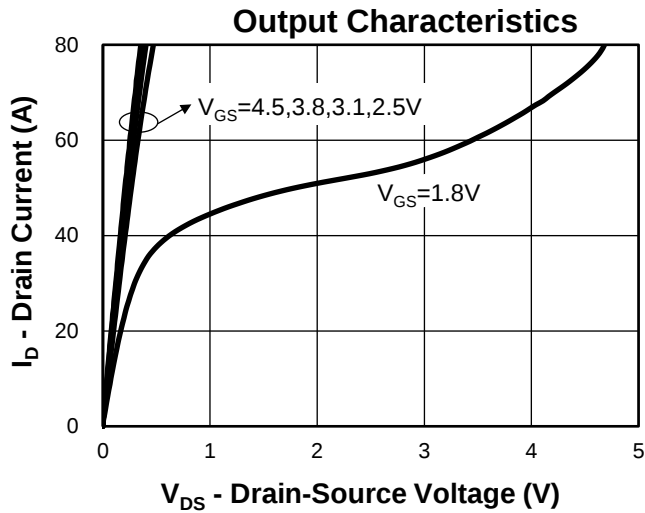


1st Line: Kwansemi Code(KS)
 2nd Line: Part Number(2410)
 3rd Line: Lot Number(YWWXXX)

Typical Characteristics

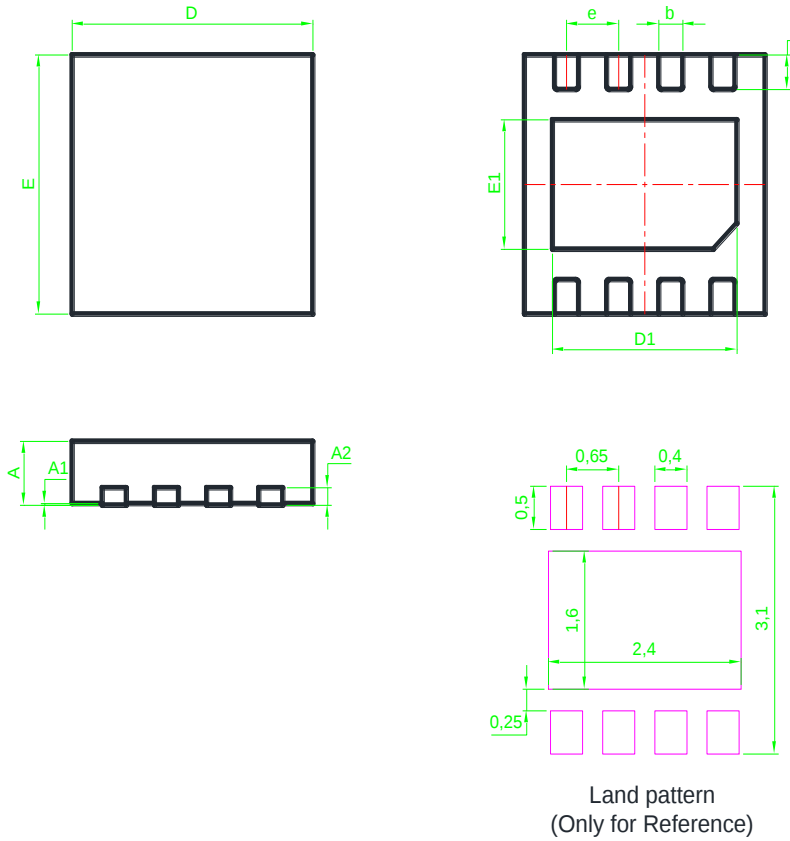


Typical Characteristics



Package Information

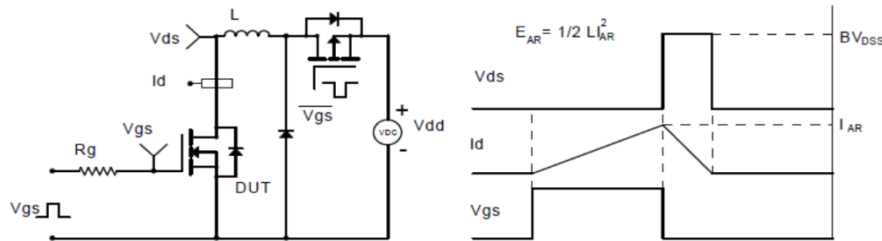
SDFN3030B



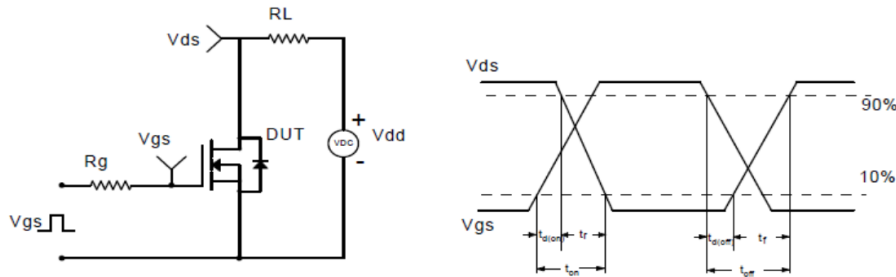
SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031
A1	0.00	0.02	0.05	0.000	0.001	0.002
A2	0.203BSC			0.008		
b	0.25	0.30	0.35	0.010	0.012	0.014
D	2.90	3.00	3.10	0.114	0.118	0.122
D1	2.20	2.30	2.40	0.087	0.091	0.094
e	0.65BSC			0.026		
E	2.90	3.00	3.10	0.114	0.118	0.122
E1	1.40	1.50	1.60	0.055	0.059	0.063
L	0.35	0.40	0.45	0.014	0.016	0.018

Note: Dimensions do not inclusive burrs and mold flash.

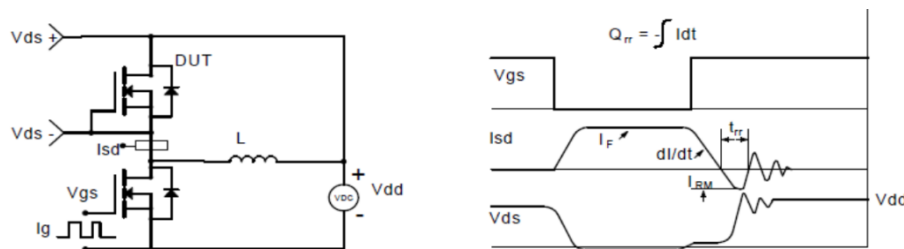
Avalanche Test Circuit and Waveforms



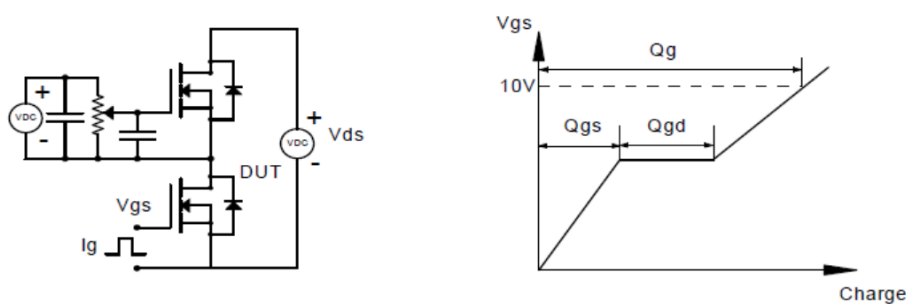
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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