

Features

- -100V/-58A,
 $R_{DS(ON)} = 21m\Omega(Typ.)@V_{GS}=-10V$
 $R_{DS(ON)} = 24m\Omega(Typ.)@V_{GS}=-4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

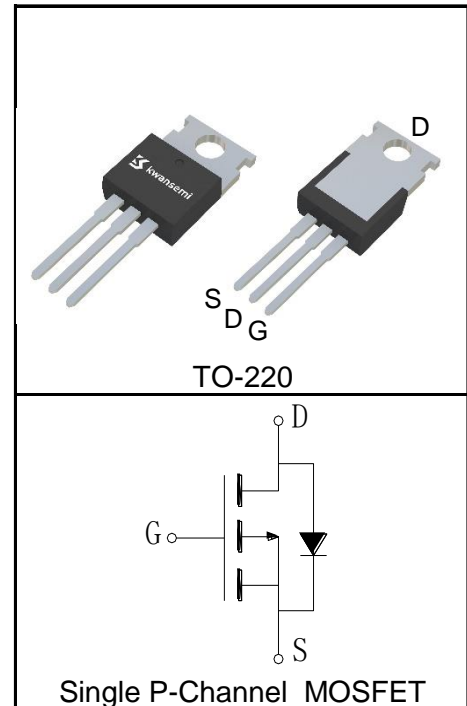
Applications

- Power Switching Appliaction
- Load Switching



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	-100	V	
V_{GSS}	Gate-Source Voltage	± 20		
T_{Jmax}	Maximum Junction Temperature	175	$^\circ C$	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 175	$^\circ C$	
I_S	Diode Continuous Forward Current	$T_C=25^\circ C$	-58	A
Mounted on Large Heat Sink				
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ C$	-232	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=-10V$)	$T_C=25^\circ C$	-58	A
		$T_C=100^\circ C$	-41	
P_D	Maximum Power Dissipation	$T_C=25^\circ C$	197	W
		$T_C=100^\circ C$	98	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.76	$^\circ C/W$	
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	100	$^\circ C/W$	
Drain-Source Avalanche Ratings				
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	625	mJ	

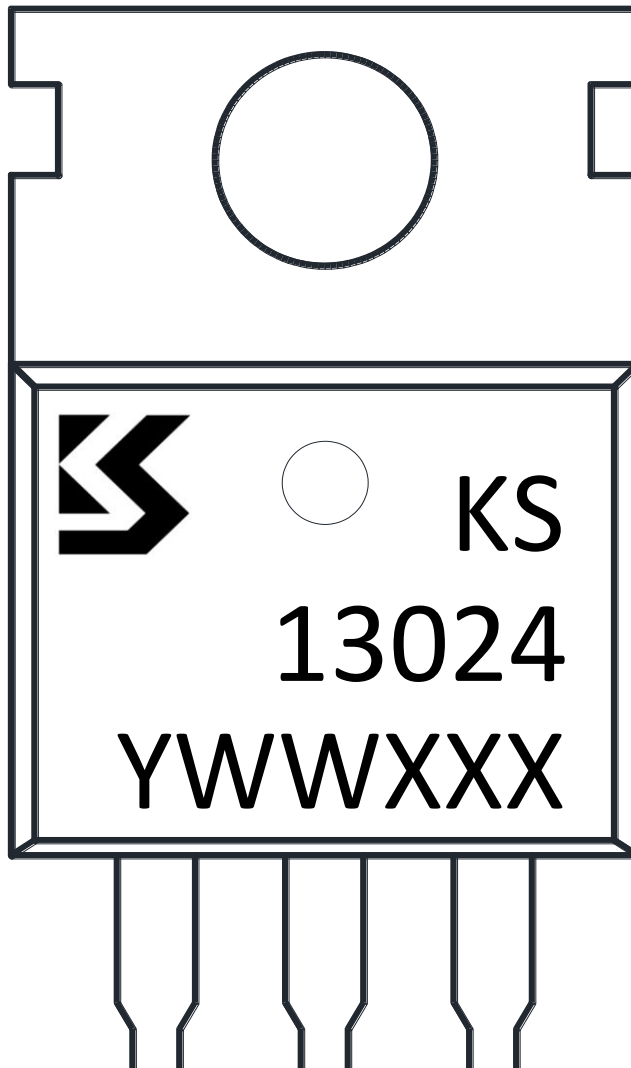
Electrical Characteristics ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS13024CA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-100			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-100V, V_{GS}=0V$			-1	μA
		$T_J=125^\circ\text{C}$			-30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.1	-1.9	-2.3	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_{DS}=-30A$		21	26	$m\Omega$
		$V_{GS}=-4.5V, I_{DS}=-20A$		24	32	$m\Omega$
Diode Characteristics						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=-30A, V_{GS}=0V$		-0.87	-1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=-30A, di_{SD}/dt=-100A/\mu s$		61		ns
Q_{rr}	Reverse Recovery Charge			168		nC
Dynamic Characteristics⁽⁶⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		2		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-50V,$ Frequency=200KHz		7215		pF
C_{oss}	Output Capacitance			280		
C_{rss}	Reverse Transfer Capacitance			240		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-50V, I_{DS}=-30A,$ $V_{GEN}=-10V, R_G=3\Omega$		23		ns
t_r	Turn-on Rise Time			48		
$t_{d(OFF)}$	Turn-off Delay Time			120		
t_f	Turn-off Fall Time			41		
Gate Charge Characteristics⁽⁶⁾						
Q_g	Total Gate Charge	$V_{DS}=-50V, V_{GS}=-10V,$ $I_{DS}=-30A$		130		nC
Q_{gs}	Gate-Source Charge			23		
Q_{gd}	Gate-Drain Charge			30		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by T_{Jmax} , Starting $T_J = 25^\circ\text{C}$, $I_{ASmax} = -50A$, $L=0.5\text{mH}$, $V_{DD} = -50V$, $R_G = 25\Omega$, $V_{GS} = -10V$. Part not recommended for use above this value. 100% Final Test at $I_{AS} = -35A$, $L=0.5\text{mH}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS13024CA	TO-220	Tube	50	-	-

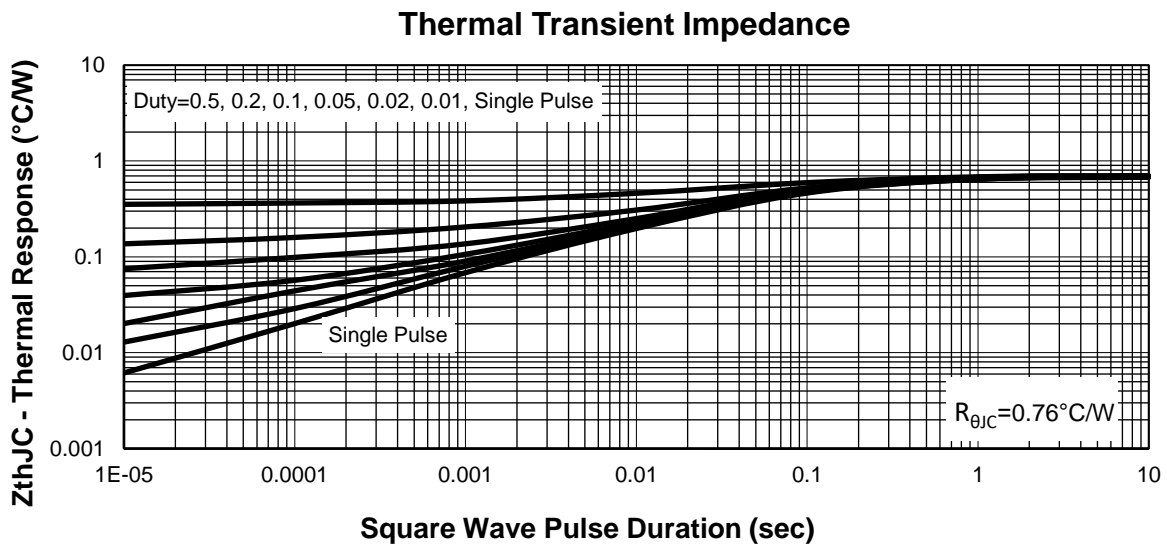
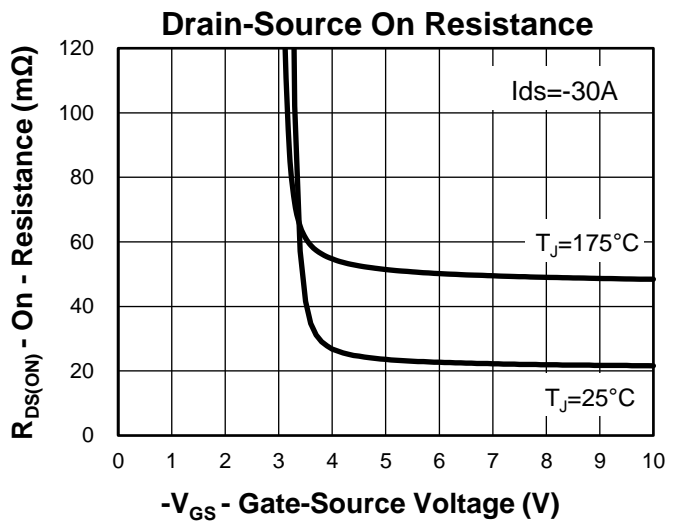
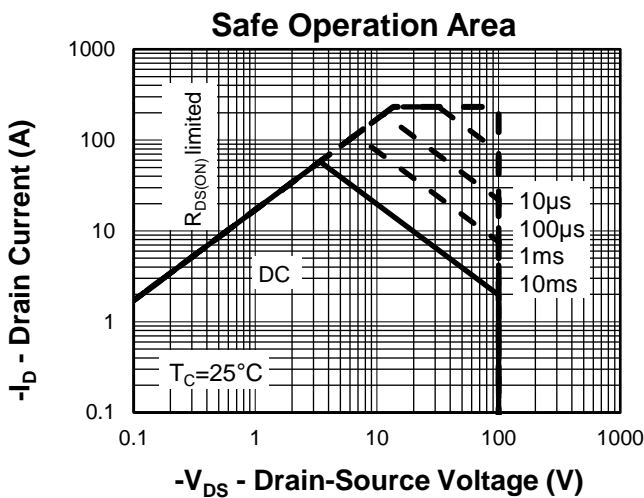
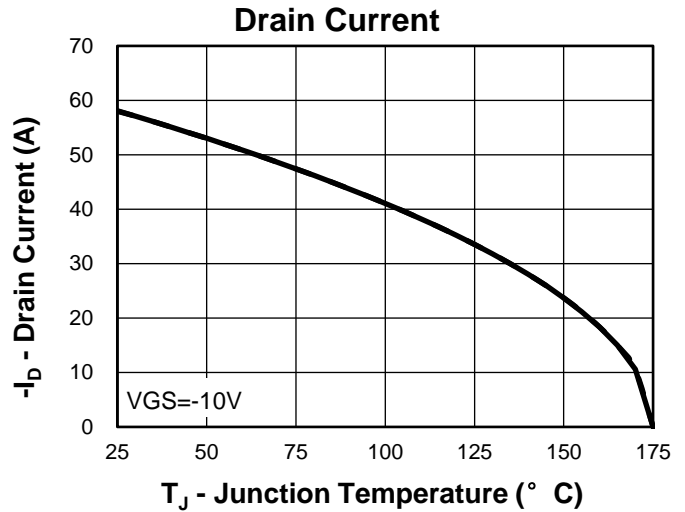
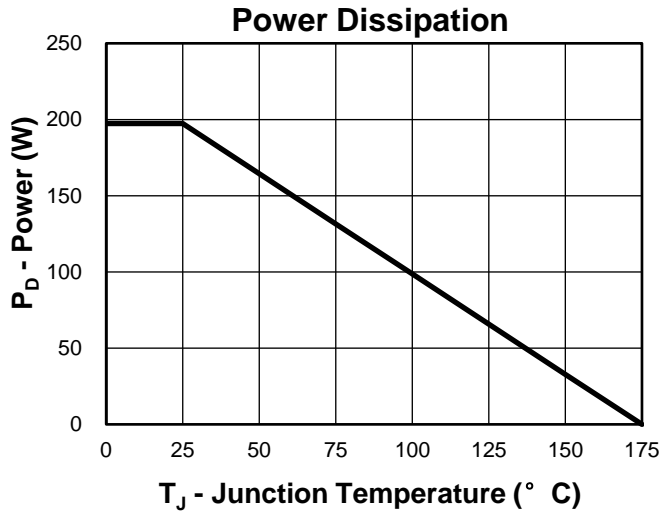


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

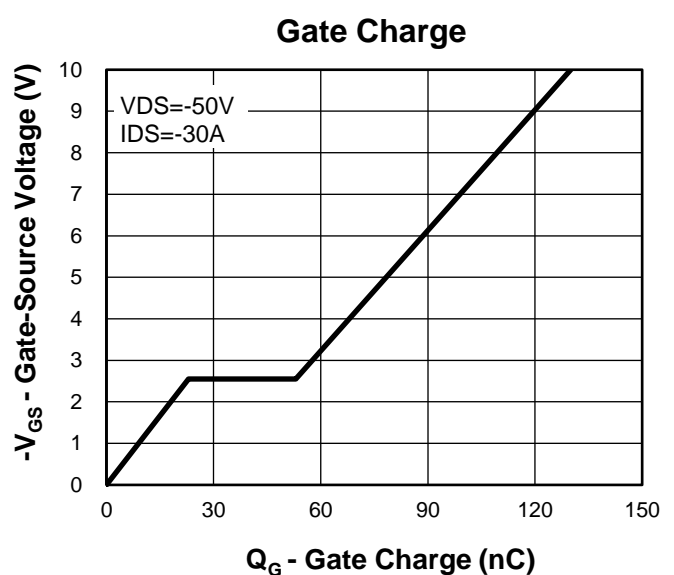
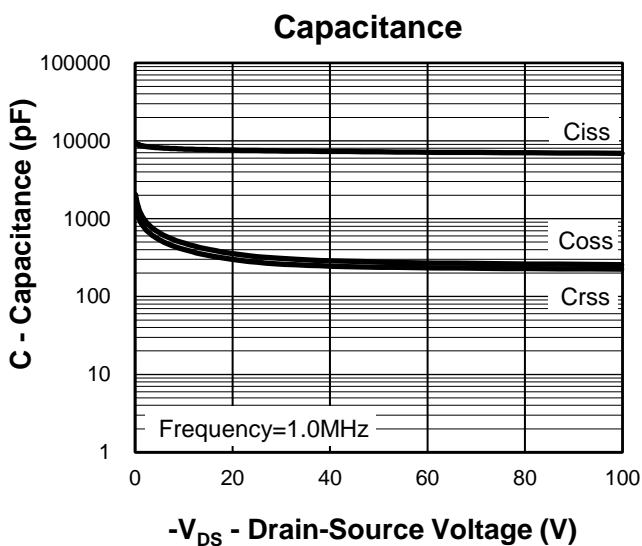
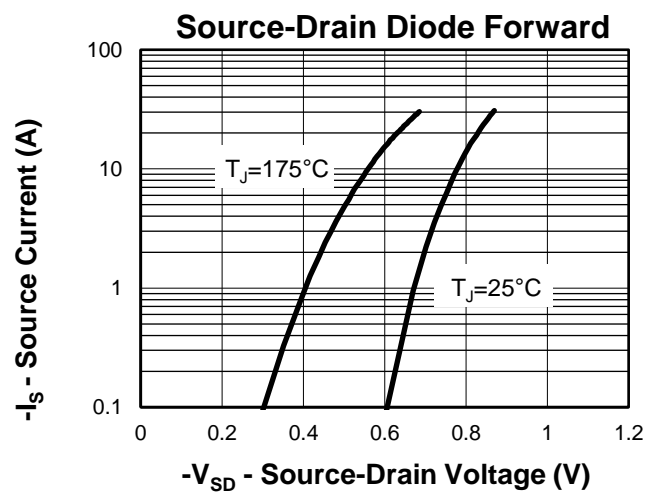
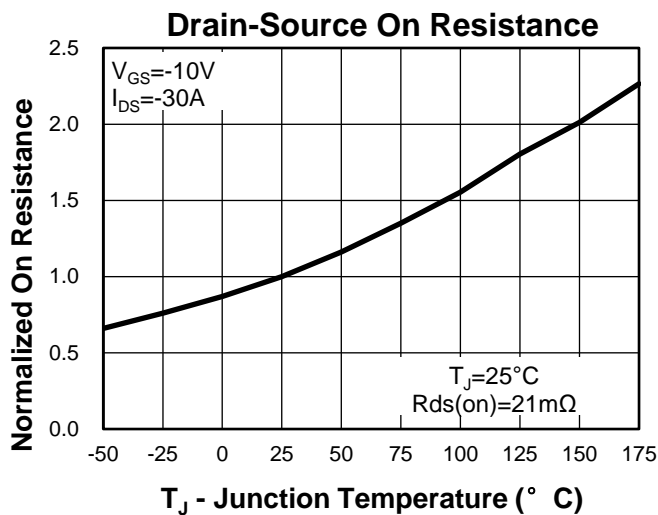
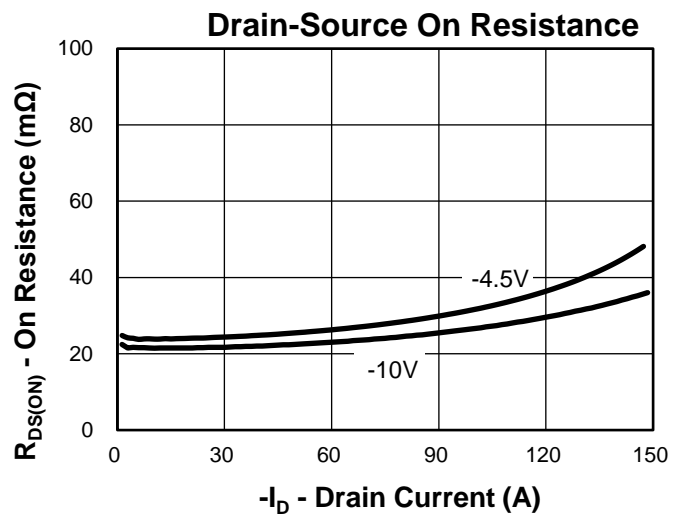
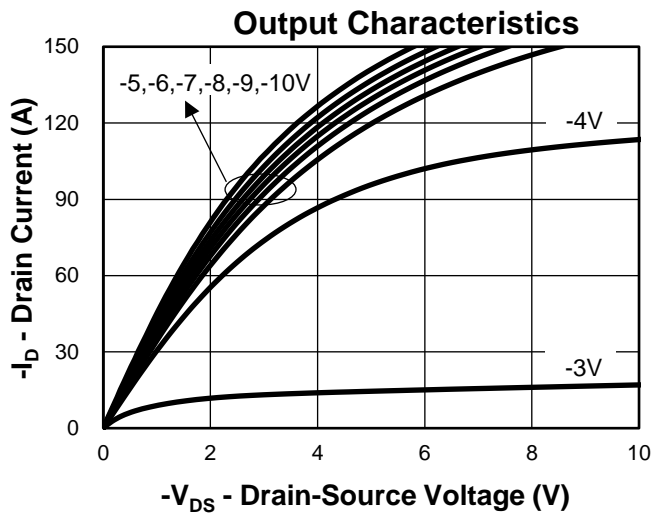
2nd Line: Part Number(13024)

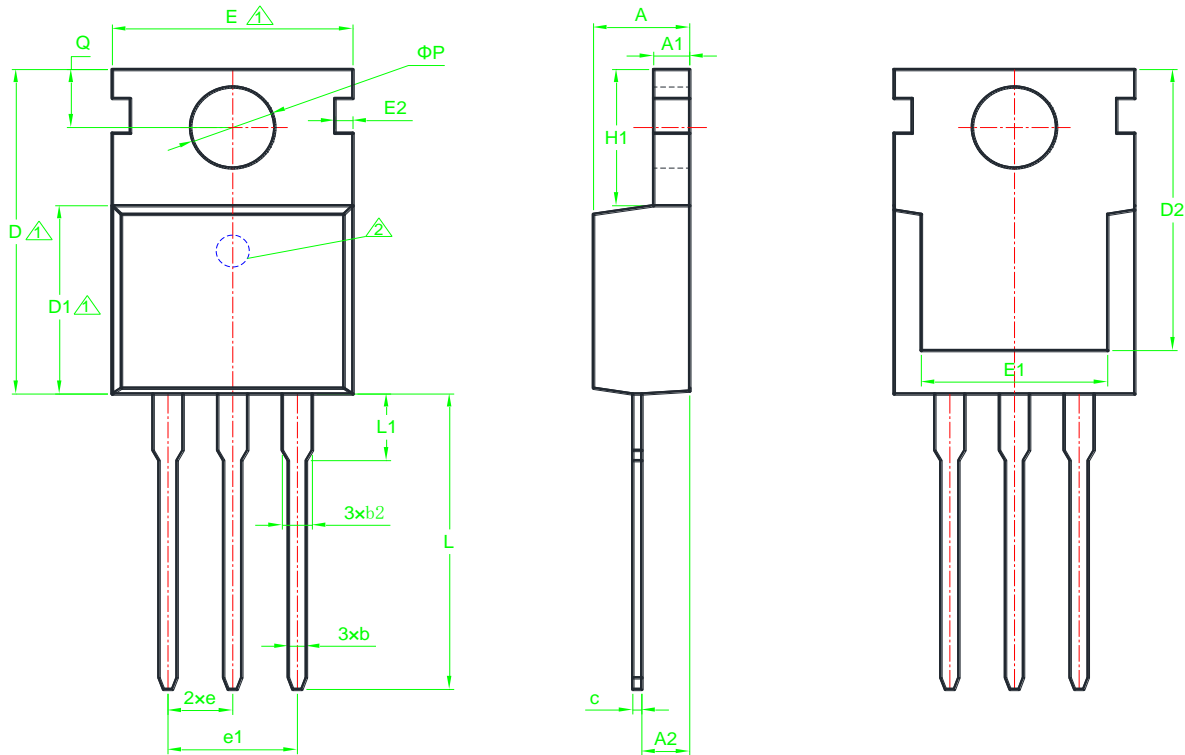
3rd Line: Lot Number(YWWXXX)

Typical Characteristics



Typical Characteristics



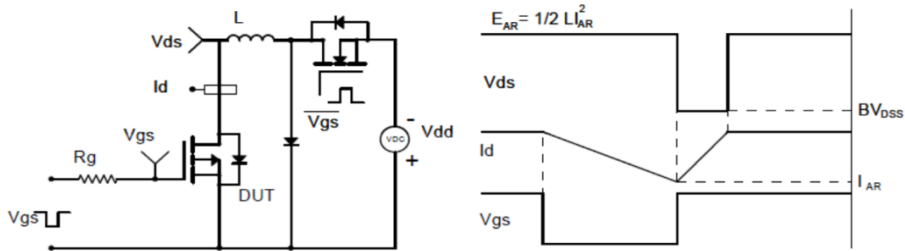
Package Information
TO-220


SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.55	4.80	0.169	0.179	0.189	E1	7.00	*	8.40	0.276	*	0.331
A1	1.20	1.30	1.45	0.047	0.051	0.057	E2	*	*	0.75	*	*	0.030
A2	2.20	2.40	2.70	0.087	0.094	0.106	e	2.54BSC			0.100BSC		
b	0.70	0.80	0.95	0.028	0.031	0.037	e1	5.08BSC			0.200BSC		
b2	1.15	1.35	1.50	0.045	0.053	0.059	H1	6.30	6.50	6.80	0.248	0.256	0.268
c	0.40	0.50	0.60	0.016	0.020	0.024	L	12.70	13.20	13.90	0.500	0.520	0.547
D	15.10	15.60	16.10	0.594	0.614	0.634	L1	2.85	*	3.50	0.112	*	0.138
D1	8.75	9.20	9.65	0.344	0.362	0.380	ΦP	3.50	3.65	3.80	0.138	0.144	0.150
D2	12.20	12.50	12.80	0.480	0.492	0.504	Q	2.70	*	2.90	0.106	*	0.114
E	9.70	10.00	10.30	0.382	0.394	0.406							

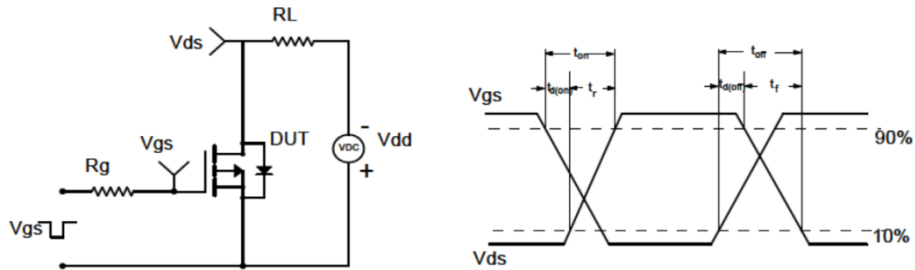
① Dimensions D and D1 and E do not include mold flash protrusions or gate burrs.

② The existence and size of demolding hole are variable depending on mold.

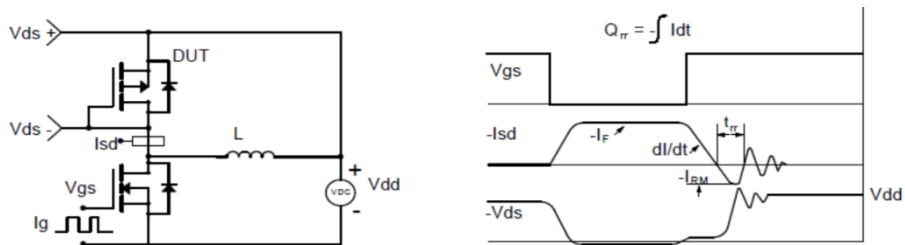
Avalanche Test Circuit and Waveforms



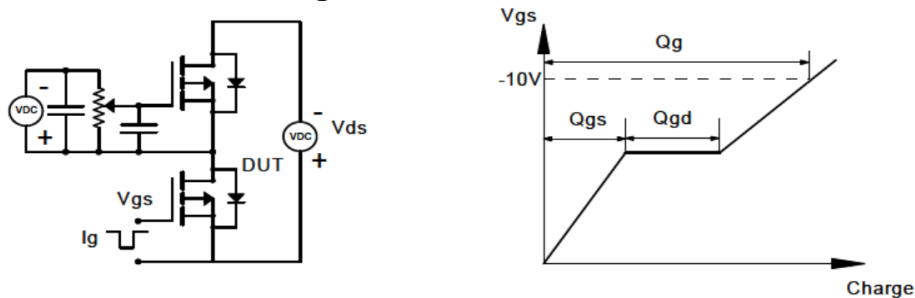
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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