

Features

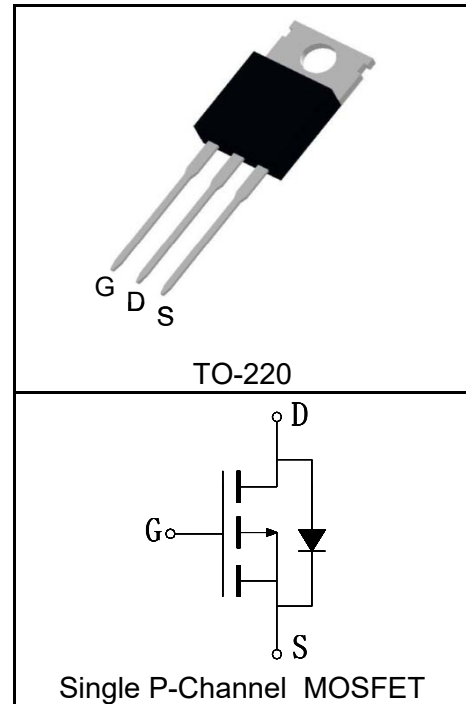
- -30V/-160A,
 $R_{DS(ON)} = 3.7m\Omega(Typ.)@V_{GS} = -10V$
 $R_{DS(ON)} = 5.6m\Omega(Typ.)@V_{GS} = -4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

Applications

- Power Switching Appliaction
- Load Switching



Pin Description



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 20	
T_J	Maximum Junction Temperature	175	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C = 25^\circ\text{C}$ -160	A
Mounted on Large Heat Sink			
$I_{DP}^{(1)}$	300 μs Pulse Drain Current Tested	$T_C = 25^\circ\text{C}$ -640	A
$I_D^{(2)}$	Continuous Drain Current($V_{GS} = -10V$)	$T_C = 25^\circ\text{C}$ -160	A
		$T_C = 100^\circ\text{C}$ -113	
P_D	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$ 150	W
		$T_C = 100^\circ\text{C}$ 75	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1	$^\circ\text{C/W}$
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	100	$^\circ\text{C/W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	225	mJ

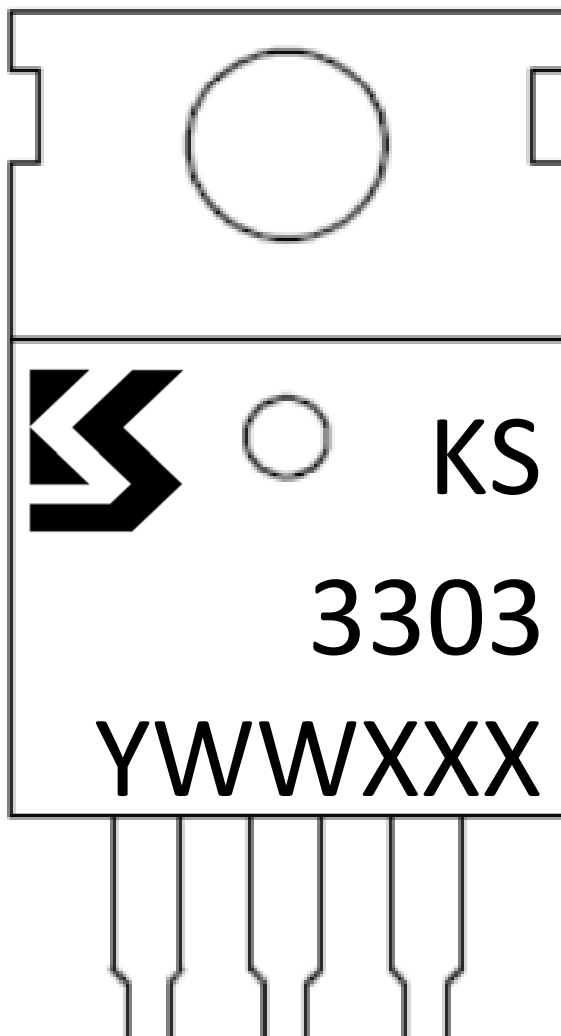
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS3303CA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V			-1	μA
			T _J =125°C		-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1	-1.6	-2.5	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} =-60A		3.7	5.2	mΩ
		V _{GS} =-4.5V, I _{DS} =-40A		5.6	7.9	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =-60A, V _{GS} =0V		-0.9	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-60A, dI _{SD} /dt=-100A/μs		45		ns
Q _{rr}	Reverse Recovery Charge			97		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		9.5		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz		6350		pF
C _{oss}	Output Capacitance			1020		
C _{rss}	Reverse Transfer Capacitance			865		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, I _{DS} =-60A, V _{GEN} =-10V, R _G =3Ω		53		ns
t _r	Turn-on Rise Time			81		
t _{d(OFF)}	Turn-off Delay Time			155		
t _f	Turn-off Fall Time			93		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _{DS} =-60A		142		nC
Q _{gs}	Gate-Source Charge			22		
Q _{gd}	Gate-Drain Charge			34		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is -60A.
 - 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} , $I_{AS} = -30A$, $L = 0.5\text{mH}$, $V_{DD} = -15V$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$.
 - 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
KS3303CA	TO-220	Tube	50	-	-

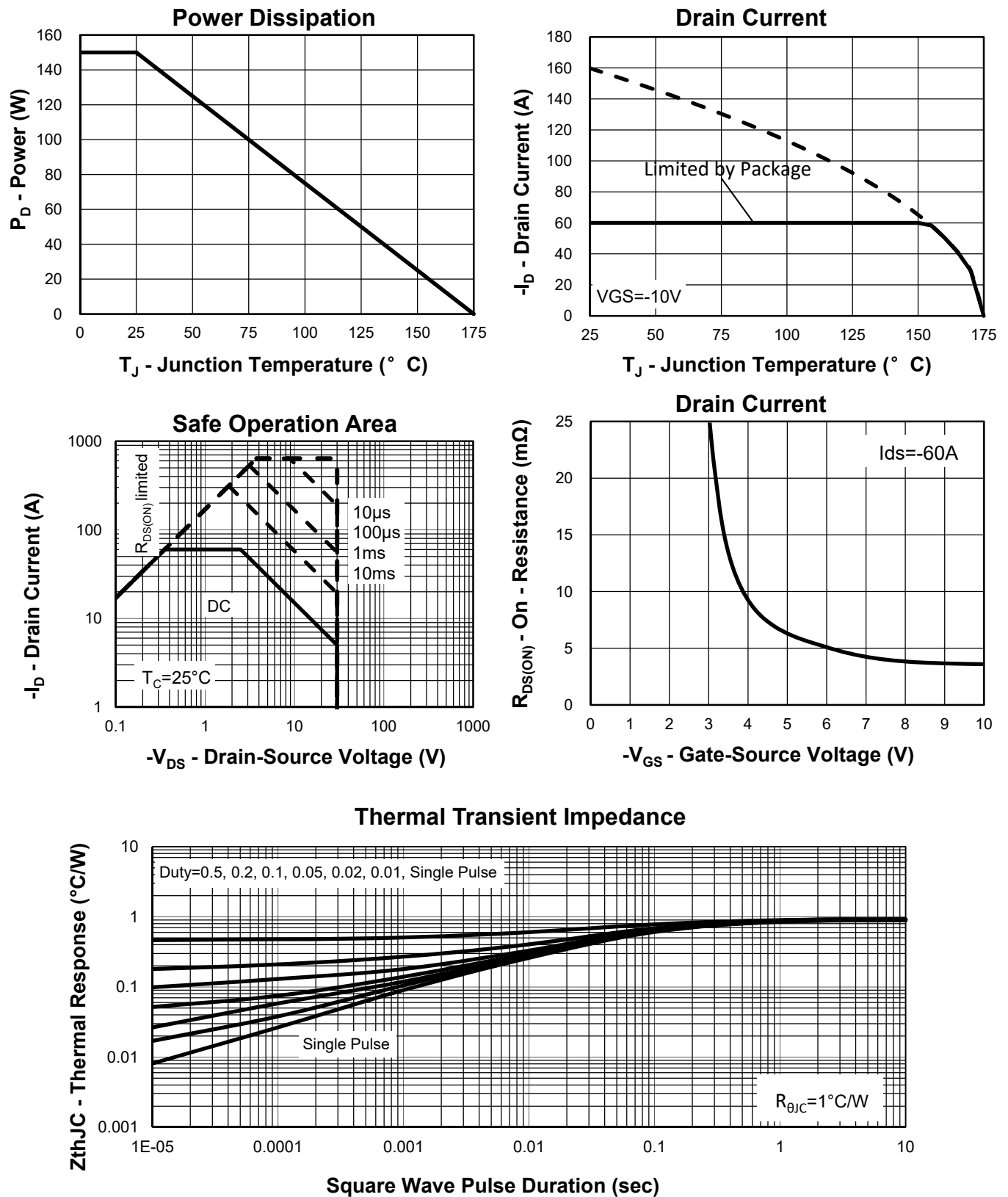


Y =Year,2017-A,2018-B,etc.

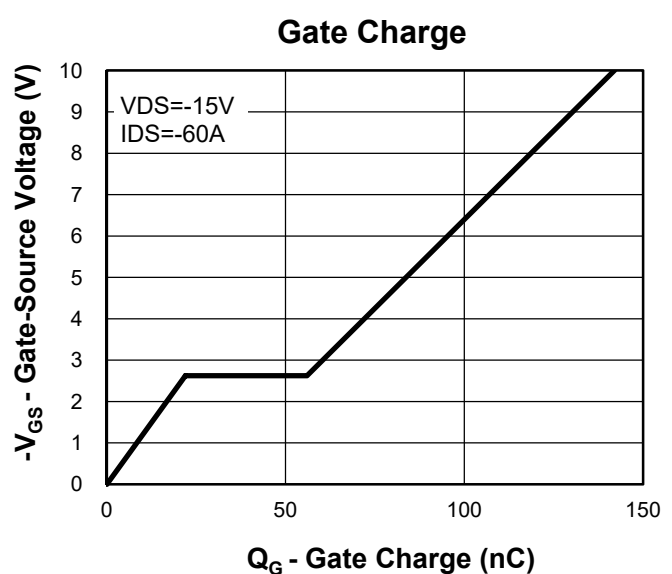
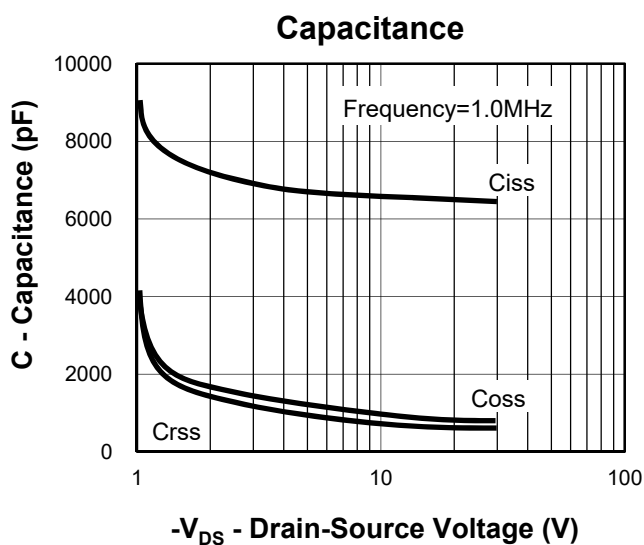
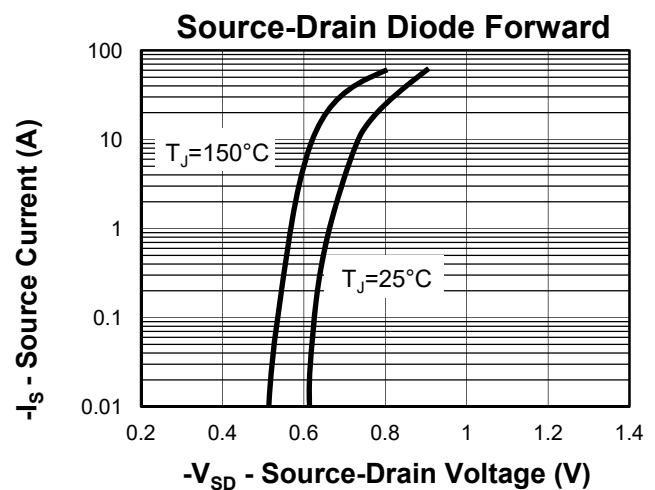
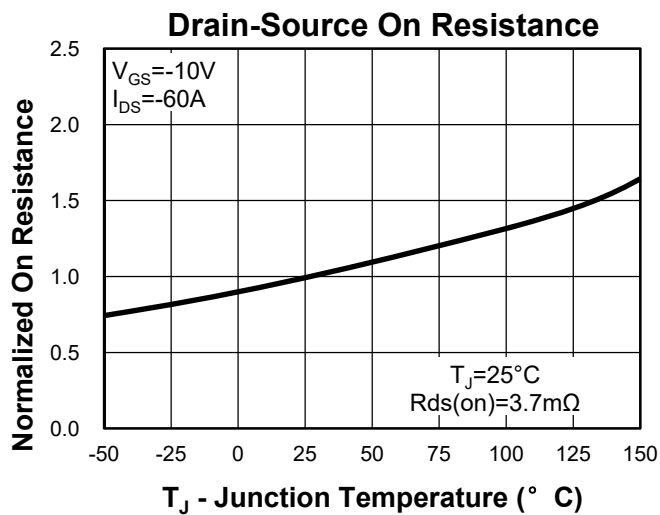
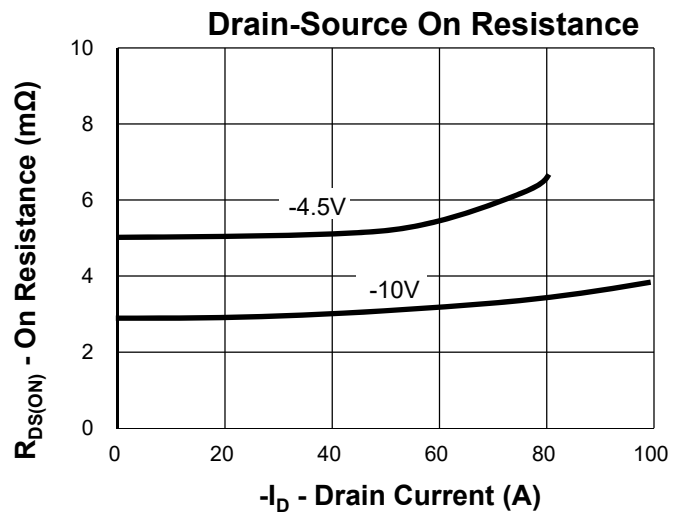
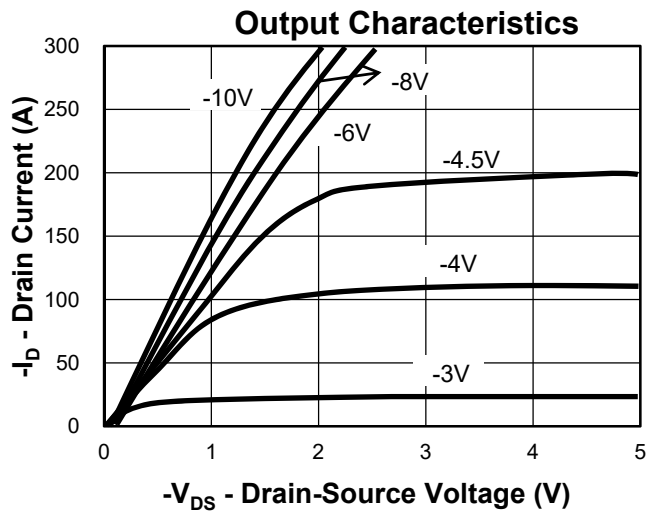
WW =Week.

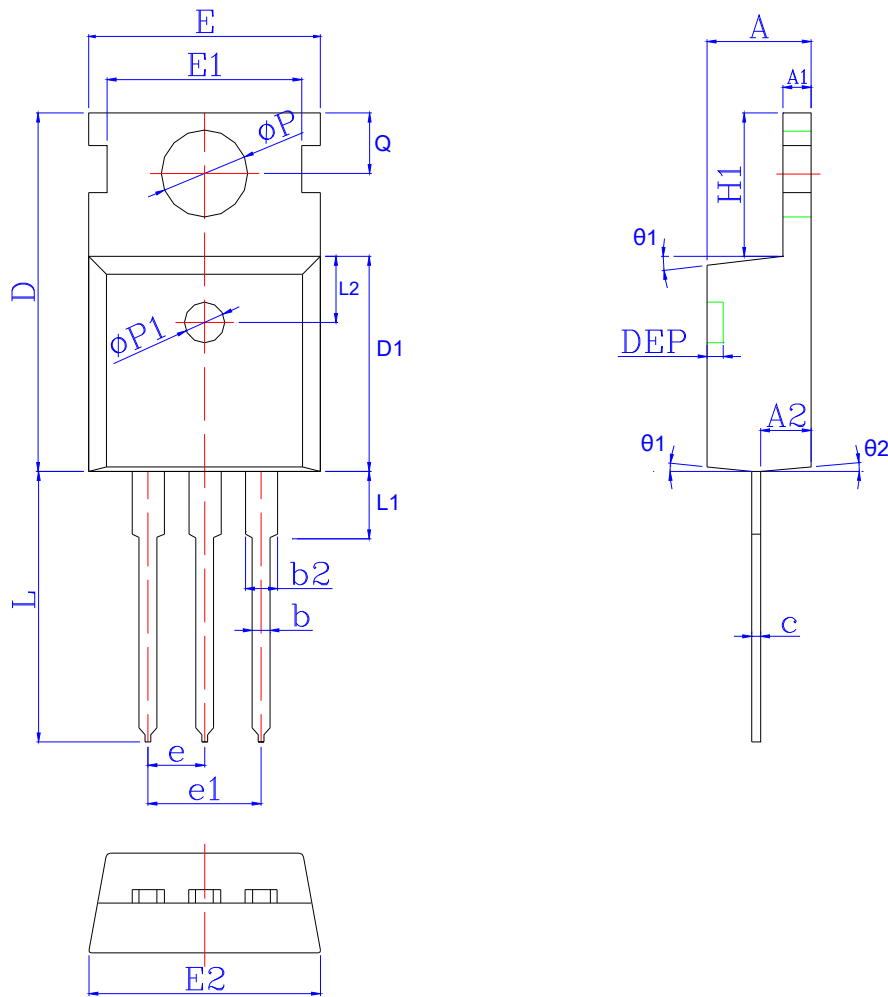
XXX =Lot number.

Typical Characteristics



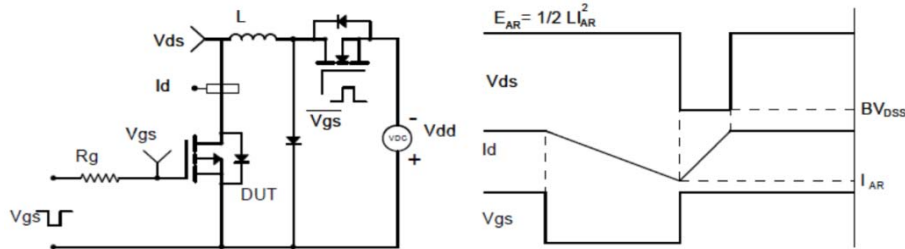
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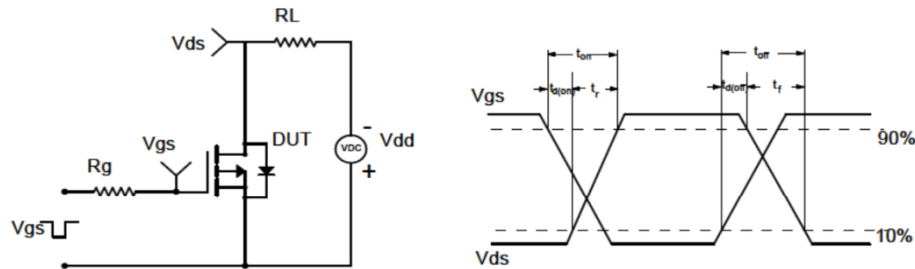
Package Information
TO-220


SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.54	4.77	0.169	0.179	0.188	$\Phi p1$	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.15	1.30	1.40	0.045	0.051	0.055	e	2.54 BSC			0.10 BSC		
A2	1.90	2.25	2.60	0.075	0.089	0.102	e1	5.08 BSC			0.20 BSC		
b	0.60	0.80	1.00	0.024	0.031	0.039	H1	6.30	6.50	6.80	0.248	0.256	0.268
b2	1.17	1.28	1.72	0.046	0.050	0.068	L	12.70	13.18	13.65	0.500	0.519	0.537
c	0.40	0.50	0.60	0.016	0.020	0.024	L1	*	*	3.95	*	*	0.156
D	15.40	15.70	16.00	0.606	0.618	0.630	L2	2.50 REF			0.098 REF		
D1	8.96	9.21	9.46	0.353	0.363	0.372	Φp	3.50	3.60	3.75	0.138	0.142	0.148
DEP	*	*	0.30	*	*	0.012	Q	2.70	2.80	3.20	0.106	0.110	0.126
E	9.66	9.97	10.28	0.380	0.393	0.405	$\theta 1$	5°	7°	9°	5°	7°	9°
E1	*	8.70	*	*	0.343	*	$\theta 2$	1°	3°	5°	1°	3°	5°
E2	9.80	10.00	10.20	0.386	0.394	0.402							

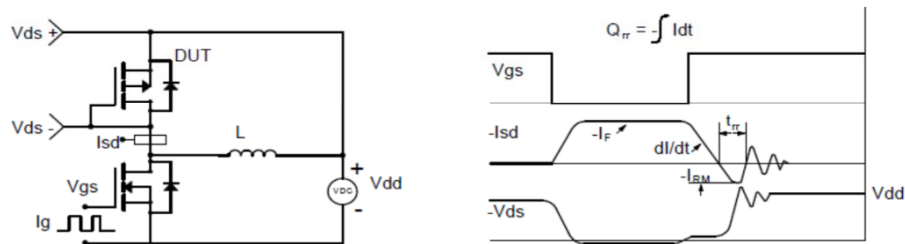
Avalanche Test Circuit and Waveforms



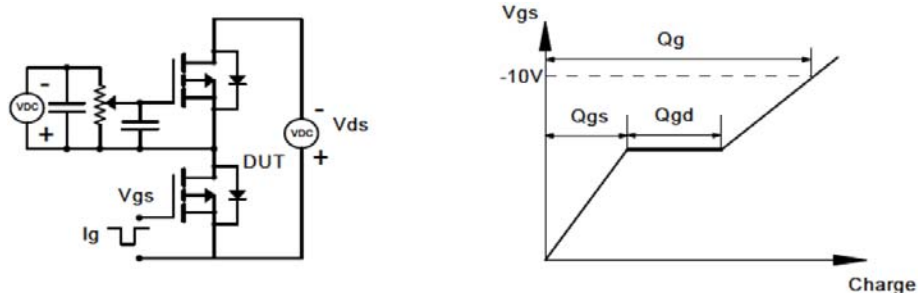
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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