

Features

- -40V/-120A,
 $R_{DS(ON)} = 4.5m\Omega(Typ.)@V_{GS}=-10V$
 $R_{DS(ON)} = 5.5m\Omega(Typ.)@V_{GS}=-4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

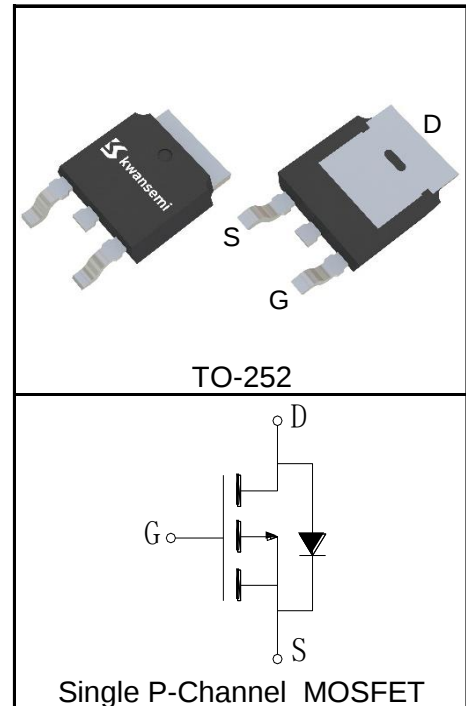
Applications

- 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	-40	V
V_{GSS}	Gate-Source Voltage	± 20	
T_J	Maximum Junction Temperature	175	$^{\circ}C$
T_{STG}	Storage Temperature Range	-55 to 175	$^{\circ}C$
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}C$ -120	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^{\circ}C$ -480	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=-10V$)	$T_C=25^{\circ}C$ -120	A
		$T_C=100^{\circ}C$ -85	
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$ 136	W
		$T_C=100^{\circ}C$ 68	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.1	$^{\circ}C/W$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	100	$^{\circ}C/W$
Drain-Source Avalanche Ratings			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	380	mJ

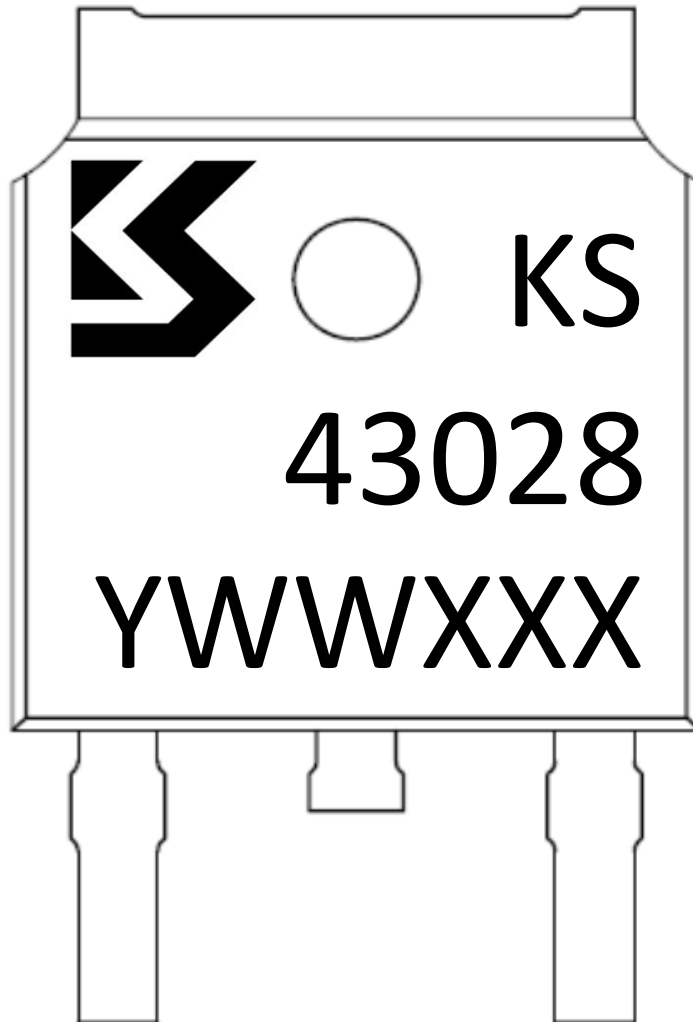
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS43028DA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-40V, 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		4.5	5.5	mΩ
		V _{GS} =-4.5V, I _{DS} =-15A		5.5	7.8	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =-20A, V _{GS} =0V		-0.82	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-20A, dI _{SD} /dt=-100A/μs		51		ns
Q _{rr}	Reverse Recovery Charge			126		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	1.5	4.8	7.2	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-20V, Frequency=1.0MHz		7140		pF
C _{oss}	Output Capacitance			720		
C _{rss}	Reverse Transfer Capacitance			545		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-20V, I _{DS} =-20A, V _{GEN} =-10V, R _G =3Ω		25		ns
t _r	Turn-on Rise Time			51		
t _{d(OFF)}	Turn-off Delay Time			93		
t _f	Turn-off Fall Time			32		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-10V, I _{DS} =-20A		112		nC
Q _{gs}	Gate-Source Charge			23		
Q _{gd}	Gate-Drain Charge			24		

- 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} , $I_{AS} = -39A$, $L=0.5\text{mH}$, $V_{DD} = -48V$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$, 100% tested and guaranteed.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

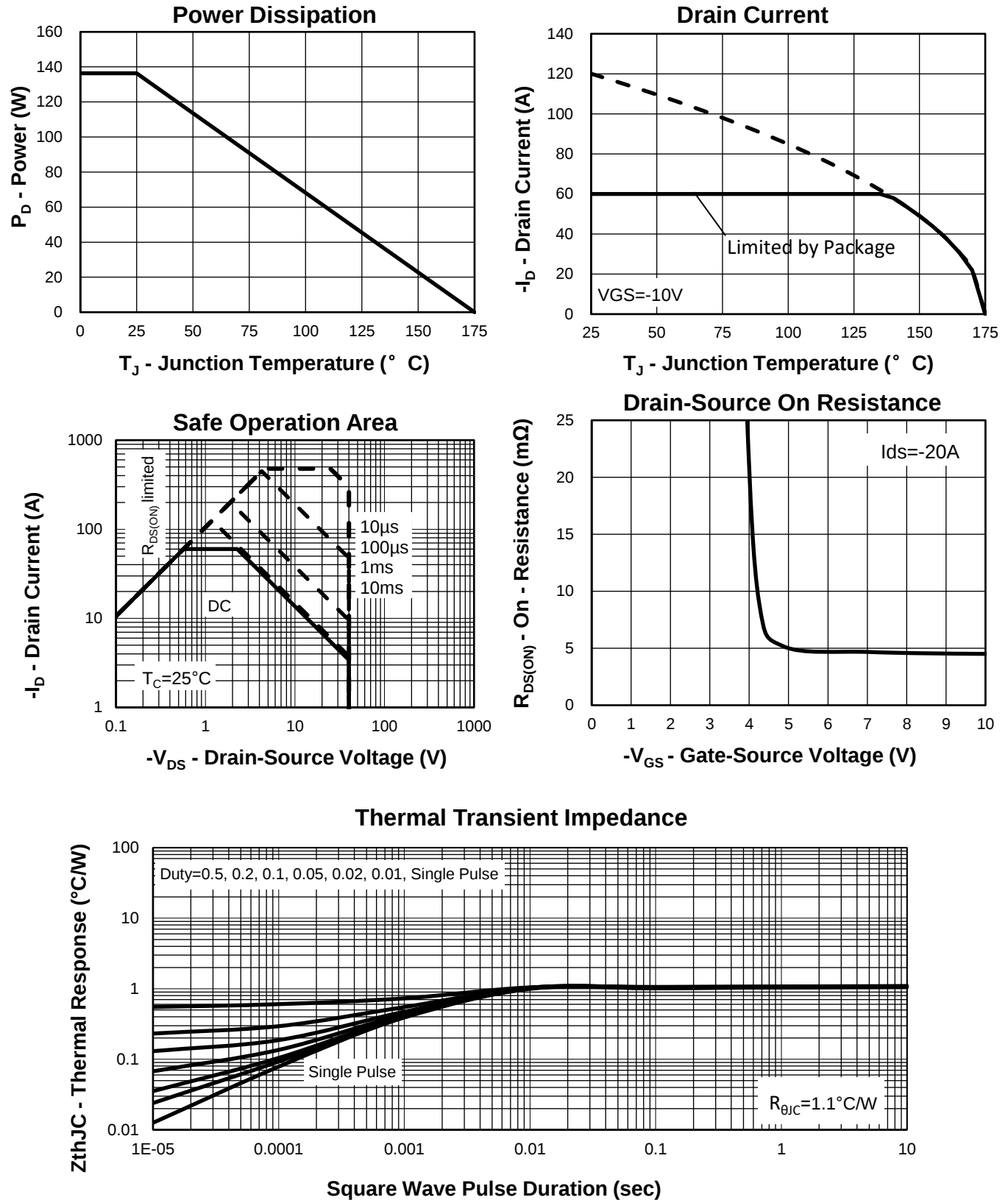
Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS43028DA	TO-252	Tape&Reel	2500	13"	16mm

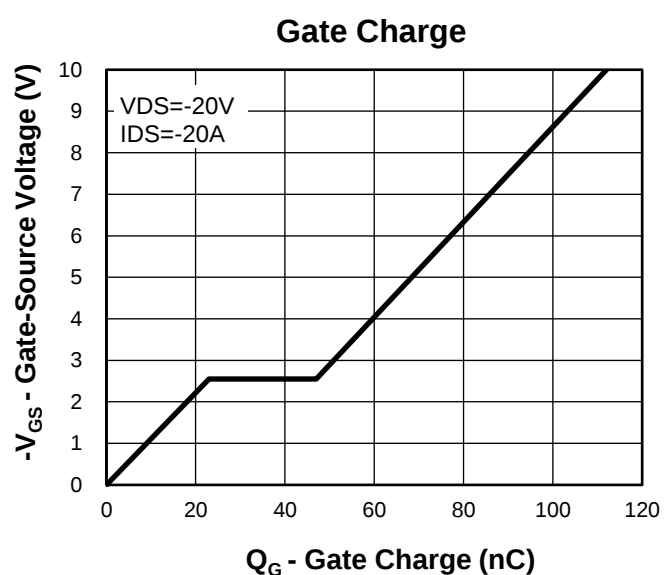
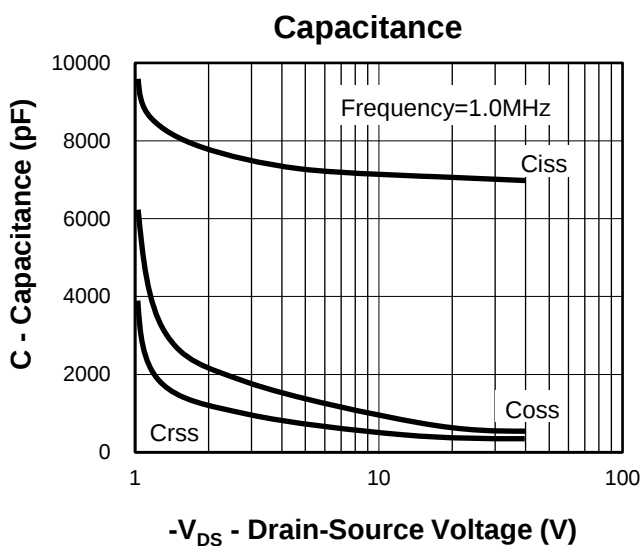
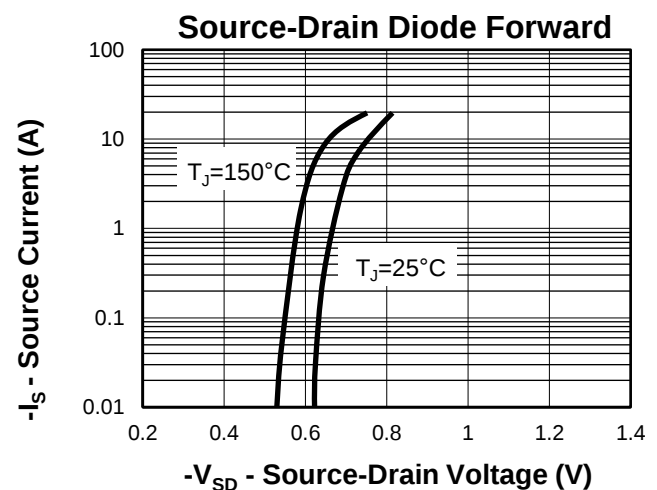
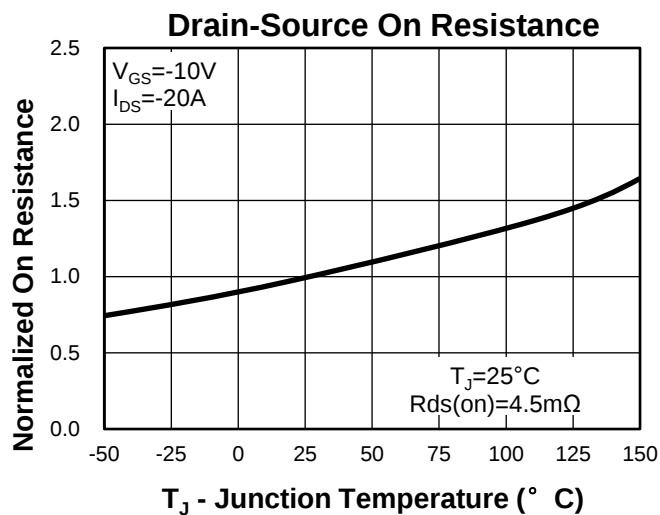
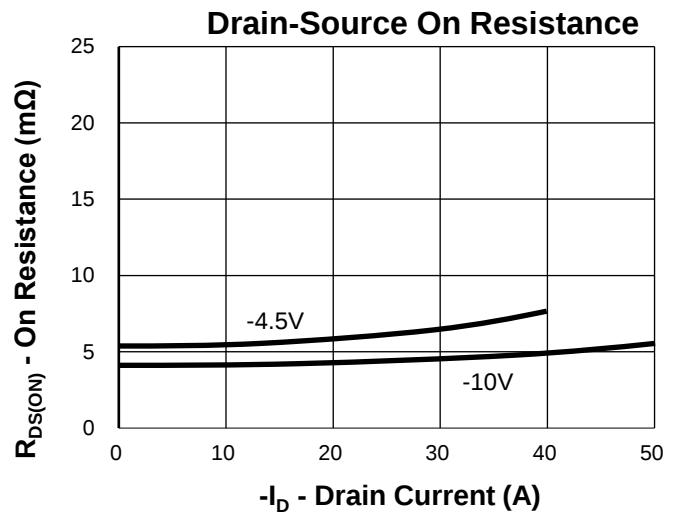
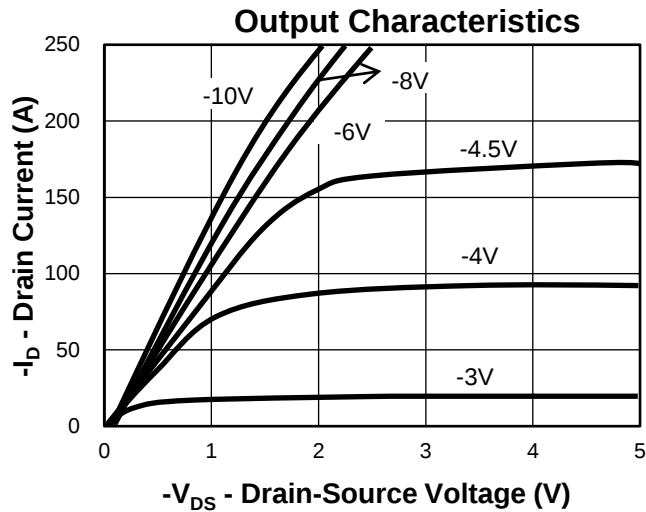


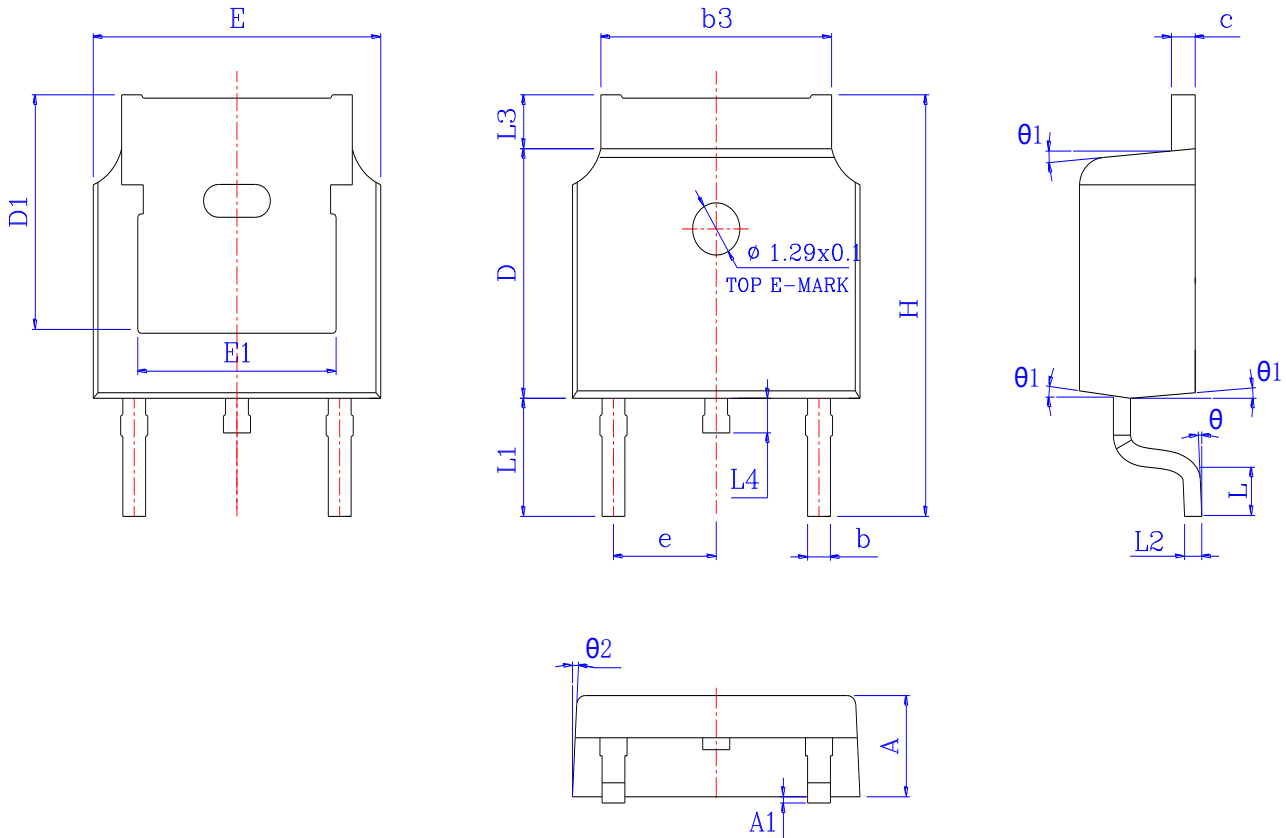
1st Line: Kwansemi LOGO, Kwansemi Code(KS)
2nd Line: Part Number(43028)
3rd Line: Lot Number(YWWXXX)

Typical Characteristics



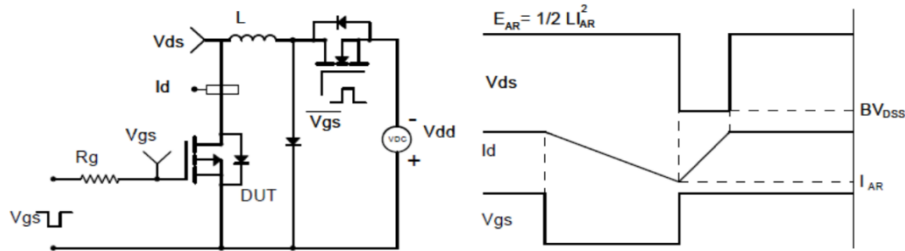
Typical Characteristics



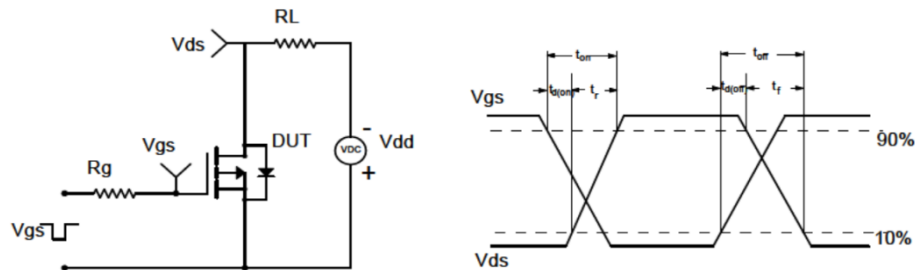
Package Information
TO-252


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	*	*	0.185	*	*
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°
$\theta 1$	5°	7°	9°	5°	7°	9°
$\theta 2$	5°	7°	9°	5°	7°	9°

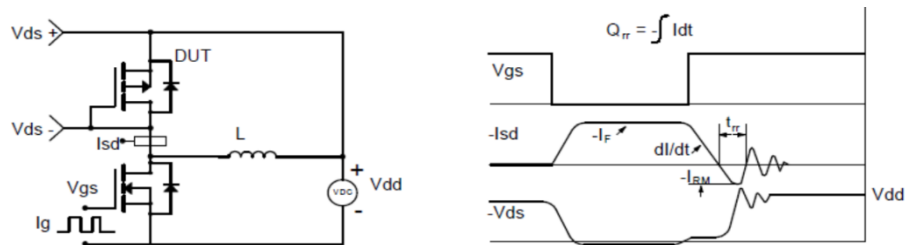
Avalanche Test Circuit and Waveforms



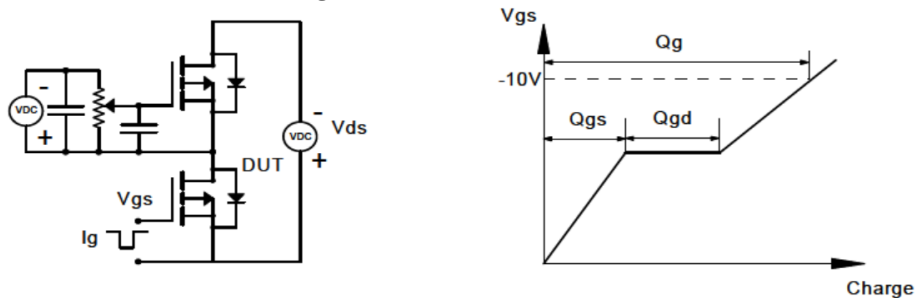
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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