

Features

- Uses CRM(CQ) advanced SkyMOS1 technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- Qualified according to JEDEC criteria

Applications

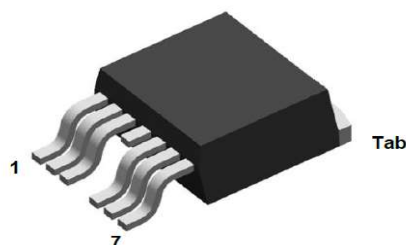
- Motor control and drive
- Battery management
- UPS (Uninterruptible Power Supplies)

Product Summary

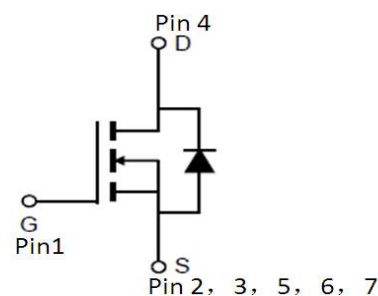
V_{DS}	100V
$R_{DS(on)}$	2.2mΩ
I_D	230A

100% DVDS Tested

100% Avalanche Tested



CRSG026N10NZ



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRSG026N10NZ	CRSG026N10NZ	TO-263-6L	Tape	N/A	N/A	800pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	100	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Silicon limit) $T_C = 25^\circ\text{C}$ (Package limit) $T_C = 100^\circ\text{C}$ (Silicon limit)	I_D	234 240 148	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D \text{ pulse}}$	936	A
Avalanche energy, single pulse ($L=0.5\text{mH}$, $R_g=25\Omega$) ^[1]	E_{AS}	529	mJ
Gate-Source voltage	V_{GS}	± 20	V
Power dissipation ($T_C = 25^\circ\text{C}$)	P_{tot}	260	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150	$^\circ\text{C}$

Notes:1.EAS was tested at $T_j = 25^\circ\text{C}$, $I_D = 46\text{A}$.

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case.	R_{thJC}	-	0.30	0.48	°C/W	
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	-	-	62	°C/W	

Electrical Characteristic (at $T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		

Static Characteristic

Drain-source breakdown voltage	BV_{DSS}	100	-	-	V	$V_{GS}=0V, I_D=250\mu A$
Gate threshold voltage	$V_{GS(th)}$	2.0	3.0	4.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Zero gate voltage drain current	I_{DSS}	-	0.05	1	μA	$V_{DS}=100V, V_{GS}=0V$ $T_j=25^\circ\text{C}$ $T_j=125^\circ\text{C}$
Gate-source leakage current	I_{GSS}	-	± 10	± 100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-source on-state resistance	$R_{DS(on)}$	-	2.2	2.6	mΩ	$V_{GS}=10V, I_D=90A$
Transconductance	g_{fs}	-	197.2	-	S	$V_{DS}=5V, I_D=100A$

Dynamic Characteristic

Input Capacitance	C_{iss}	7570	11355	17032.5	pF	$V_{GS}=0V, V_{DS}=50V,$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	964	1446	2169		
Reverse Transfer Capacitance	C_{rss}	36	54	81		
Gate Total Charge	Q_G	113	169	254	nC	$V_{GS}=10V, V_{DS}=50V,$ $I_D=100A, f=1\text{MHz}$
Gate-Source charge	Q_{gs}	45	67	101		
Gate-Drain charge	Q_{gd}	20	30	45		
Turn-on delay time	$t_{d(on)}$	23	35	53	ns	$V_{GS}=10V, V_{DD}=50V,$ $R_{G_ext}=3.0\Omega$
Rise time	t_r	74	111	167		
Turn-off delay time	$t_{d(off)}$	56	84	126		
Fall time	t_f	75	112	168		
Gate resistance	R_G	-	2.0	-	Ω	$V_{GS}=0V, V_{DS}=0V,$ $f=1\text{MHz}$

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	0.5	0.9	1.4	V	$V_{GS}=0V, I_{SD}=90A$
Body Diode Reverse Recovery Time	t_{rr}	51	101	202	ns	$I_F=100A, dI/dt=100A/\mu s$
Body Diode Reverse Recovery Charge	Q_{rr}	169	338	676	nC	

Typical Performance Characteristics

Fig 1: Output Characteristics

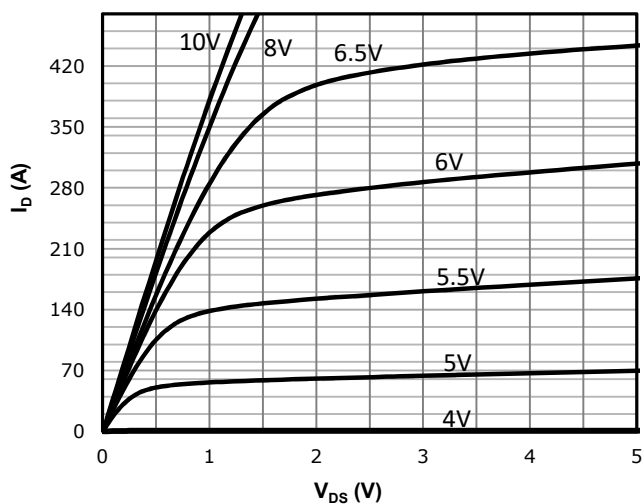


Fig 2: Transfer Characteristics

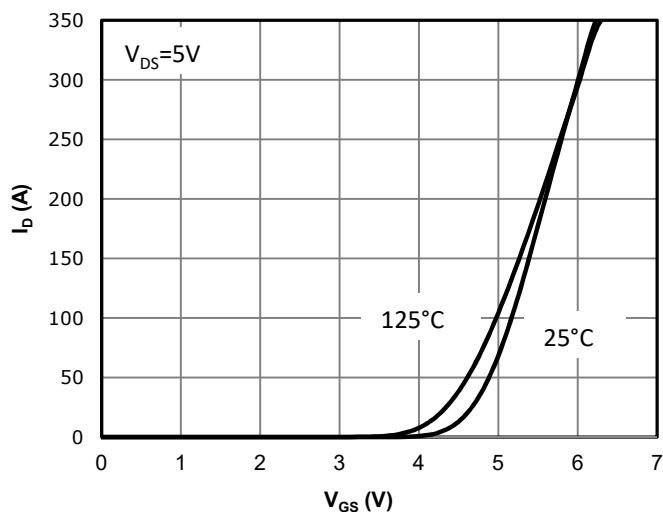
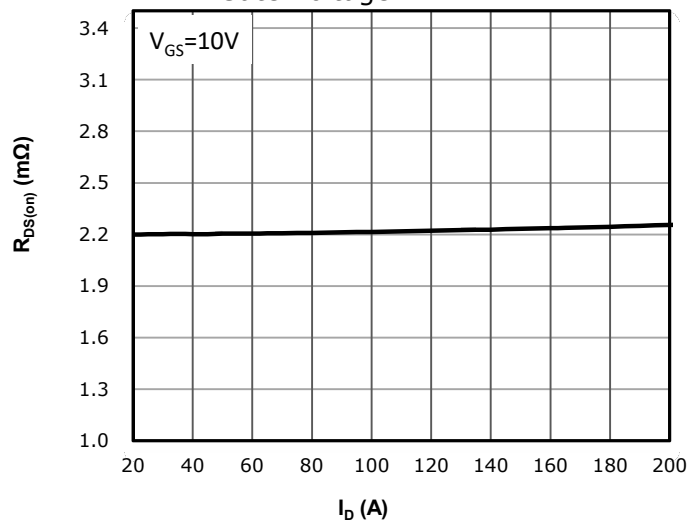
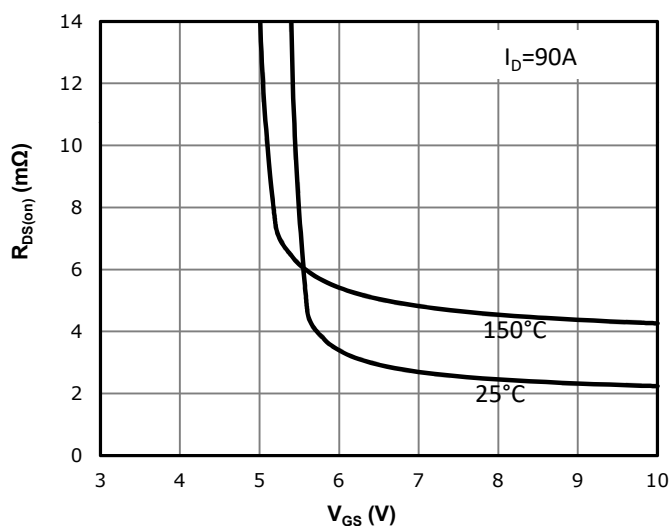
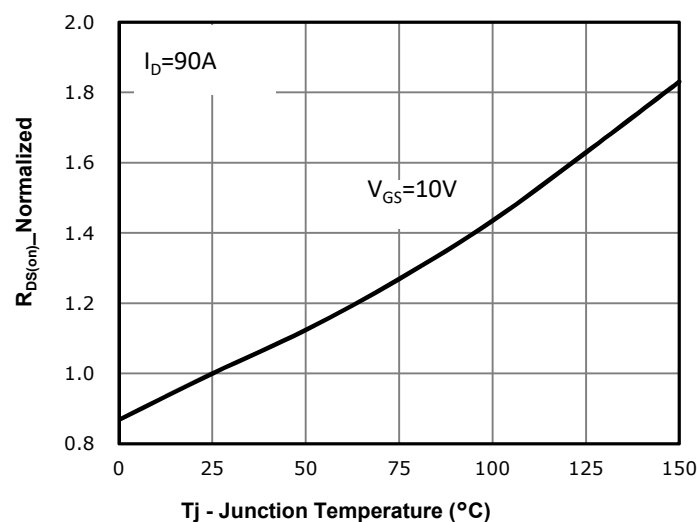

3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

Fig 4: $R_{DS(on)}$ vs Gate Voltage

Fig 5: $R_{DS(on)}$ vs. Temperature


Fig 6: Capacitance Characteristics

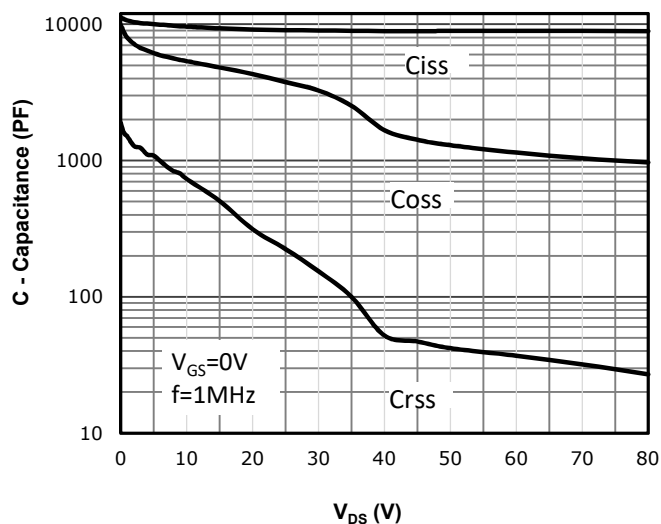


Fig 7: Gate Charge Characteristics

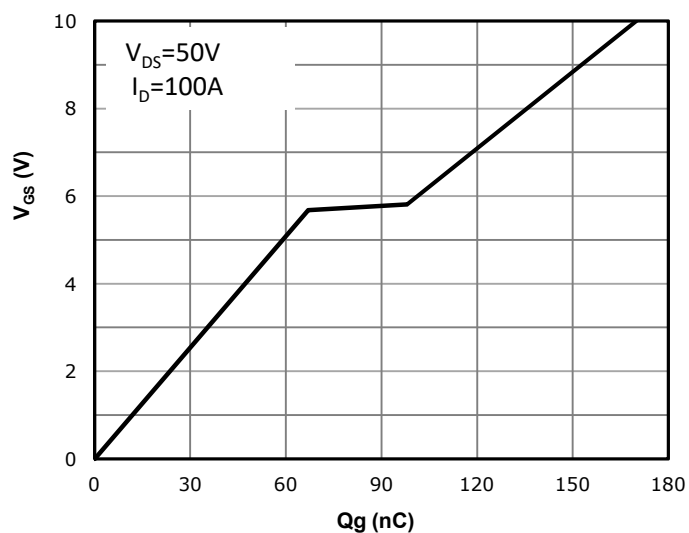


Fig 8: Body-diode Forward Characteristics

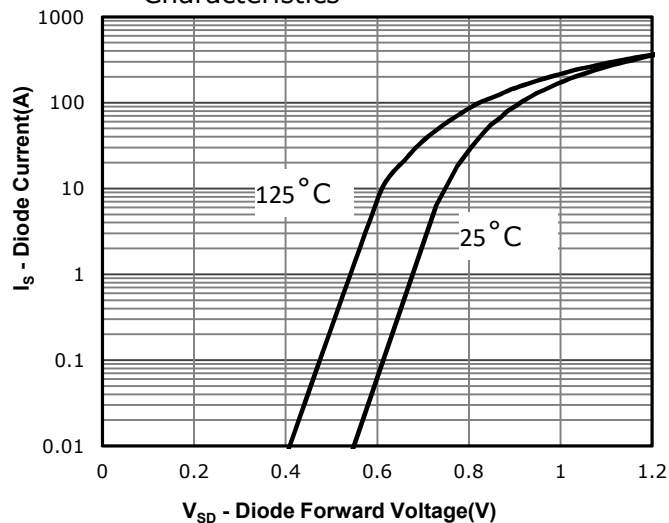


Fig 9: Power Dissipation

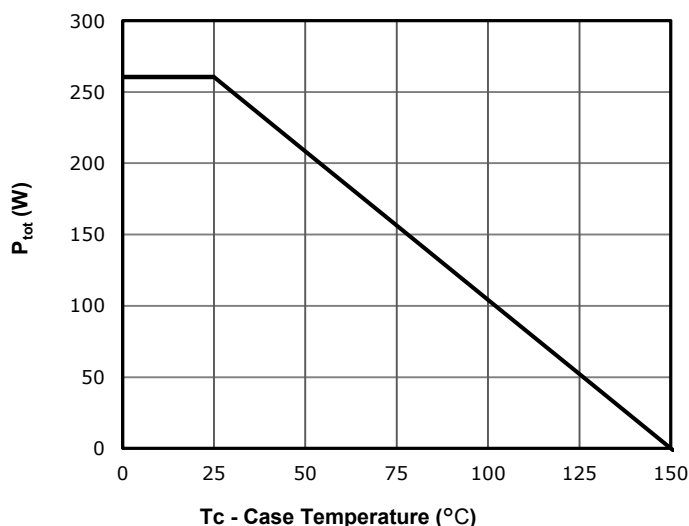


Fig 10: Drain Current Derating

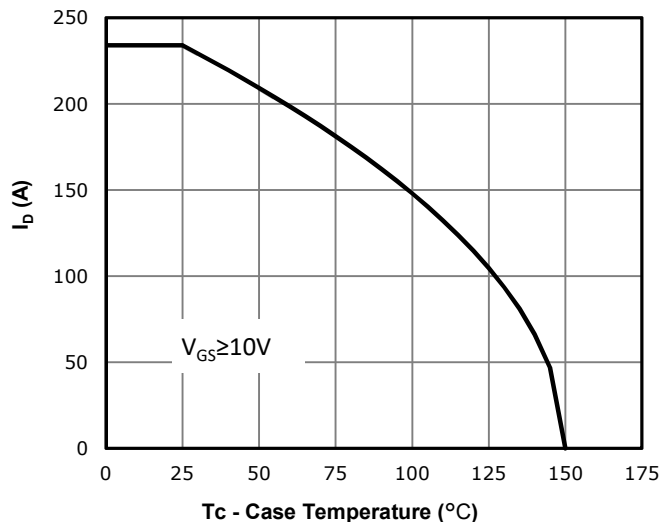


Fig 11: Safe Operating Area

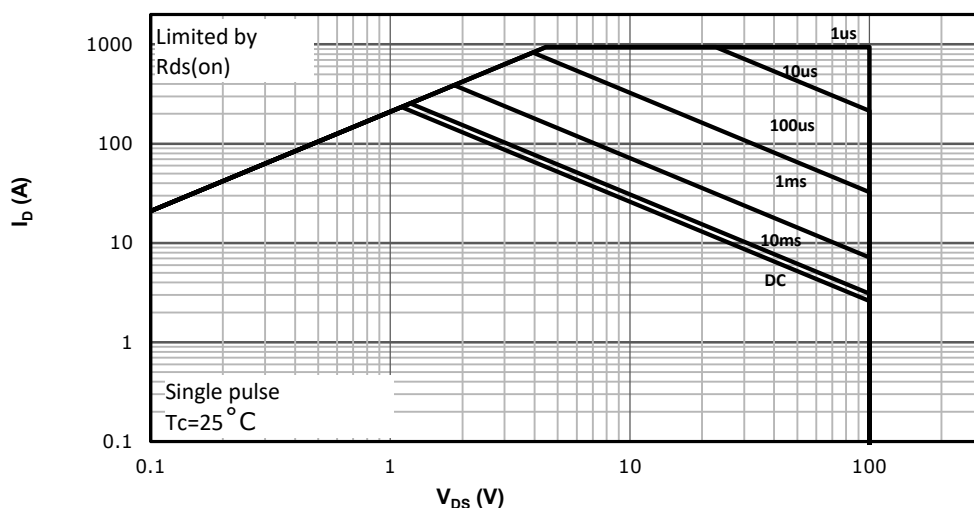
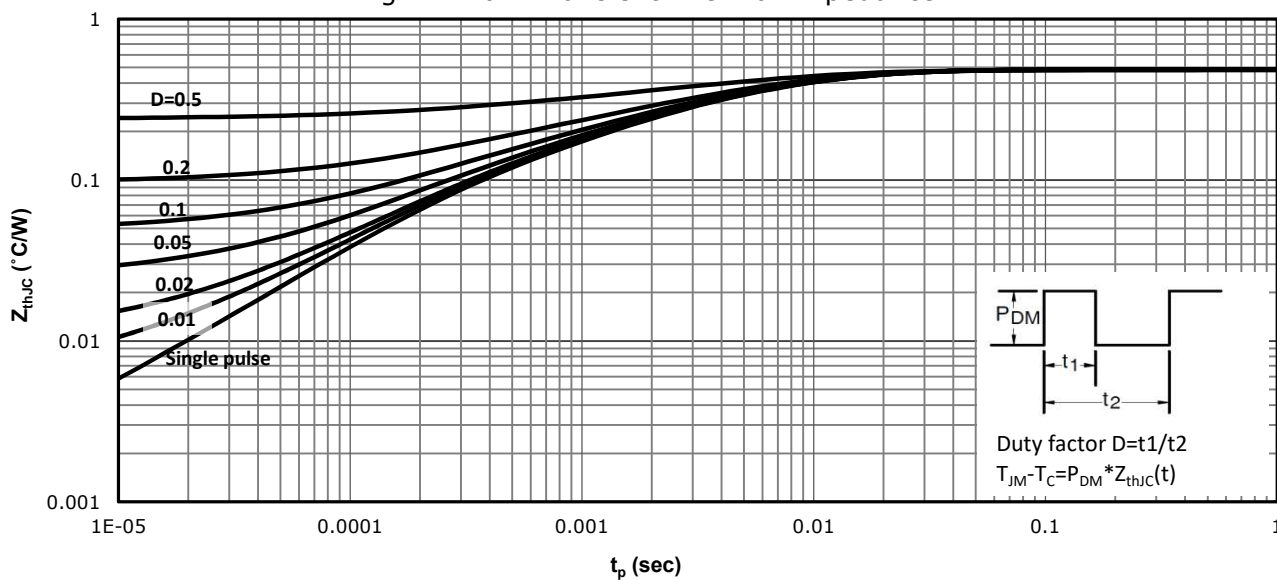
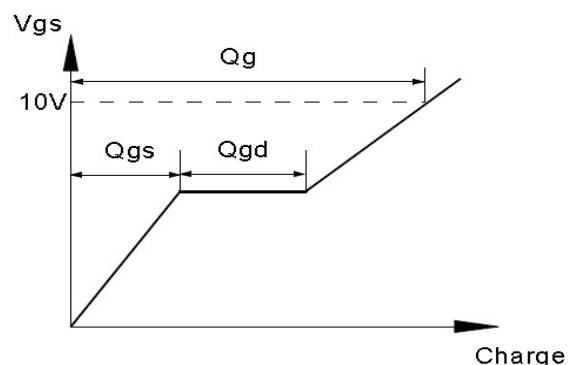
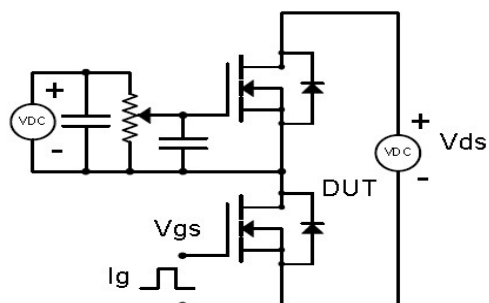


Fig 12: Max. Transient Thermal Impedance

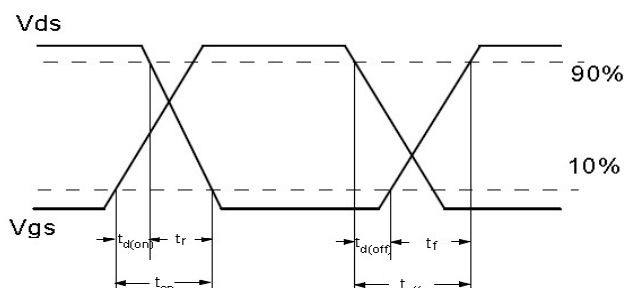
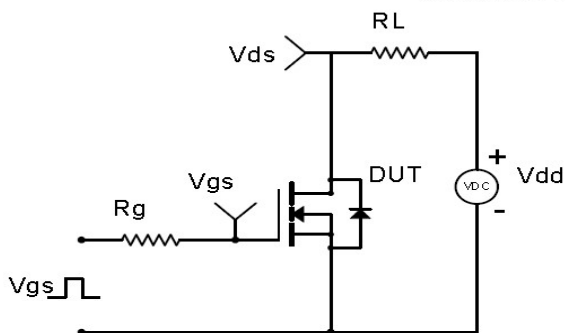


Test Circuit & Waveform

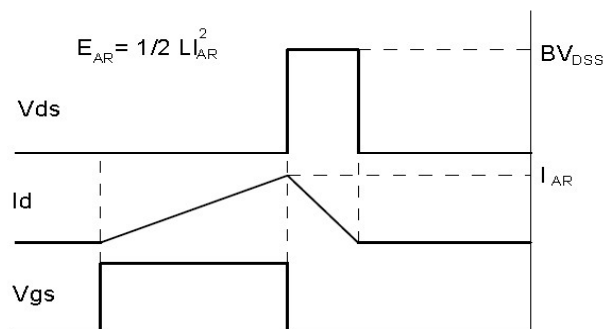
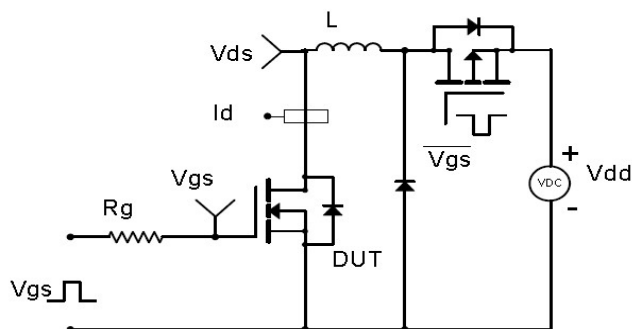
Gate Charge Test Circuit & Waveform



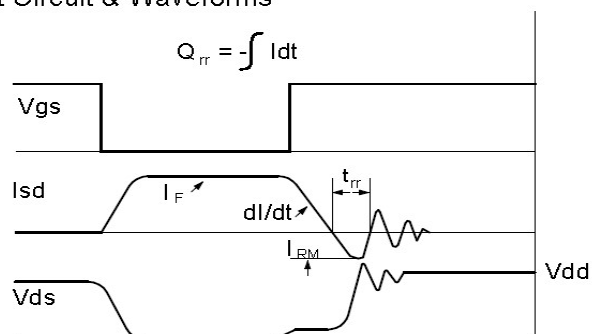
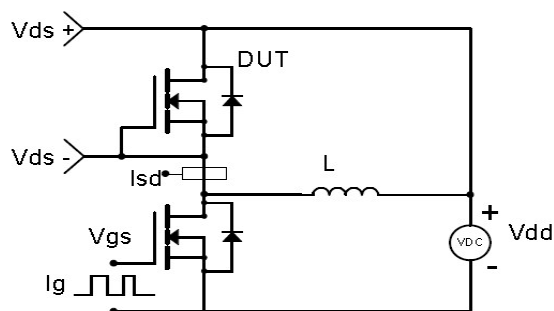
Resistive Switching Test Circuit & Waveforms

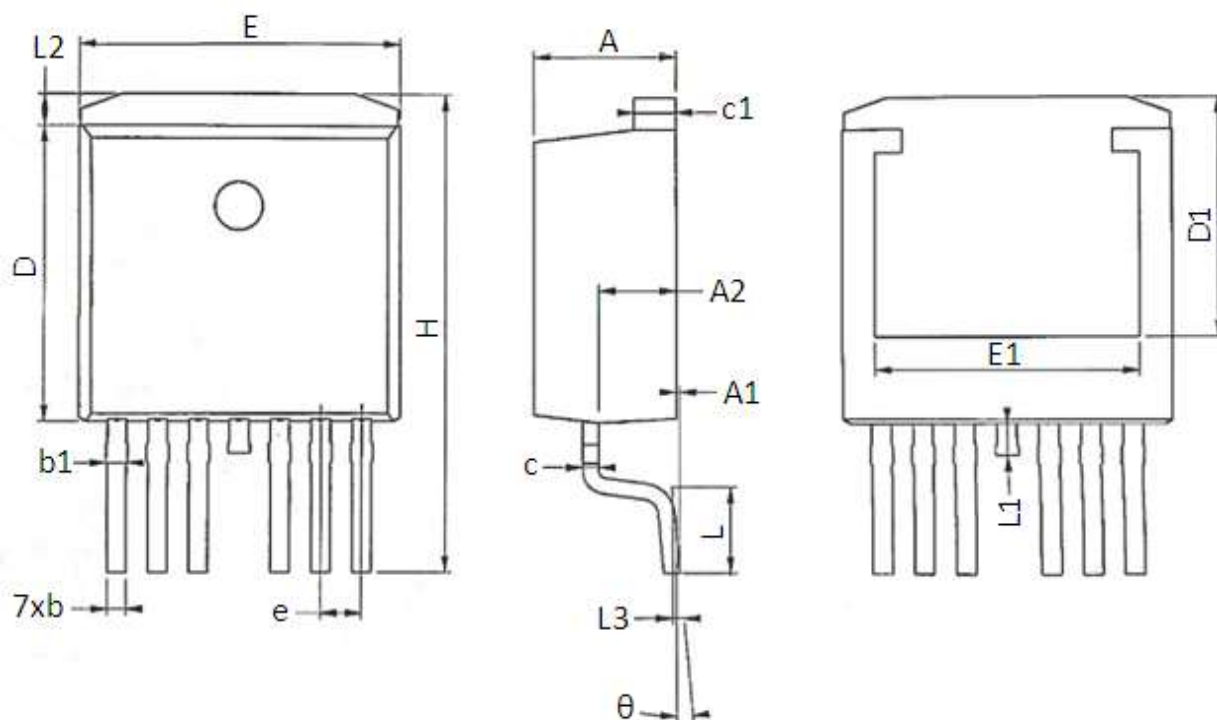


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: TO-263-6L


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.24	4.64	0.167	0.183
A1	0.00	0.25	0.000	0.010
A2	2.25	2.70	0.089	0.106
b	0.50	0.70	0.020	0.028
b1	0.50	0.90	0.020	0.035
c	0.40	0.60	0.016	0.024
c1	1.15	1.40	0.045	0.055
D	8.82	9.45	0.347	0.372
D1	6.80	--	0.268	--
e	1.27 BSC		0.050 BSC	
E	9.80	10.36	0.386	0.408
E1	7.25	--	0.285	--
H	14.61	15.88	0.575	0.625
L	1.78	3.00	0.070	0.118
L1	0.85	1.60	0.033	0.063
L2	0.80	1.60	0.031	0.063
L3	0.254 BSC		0.010 BSC	
θ	Option A	0°	8°	
	Option B	0°	-8°	

Revision History

Revision	Date	Major changes
1.0	2022/12/26	Release of formal version.

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qualified as a standard commercial product and is not intended for use in applications that require extraordinary levels of quality and reliability, such as automotive, aviation/aerospace and life-support devices or systems.

Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.

CRM(CQ) reserves the right to improve product design, function and reliability without notice.