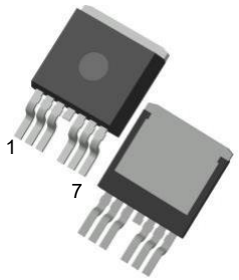
GPT018N10NTQ

100V N-Channel MOSFET

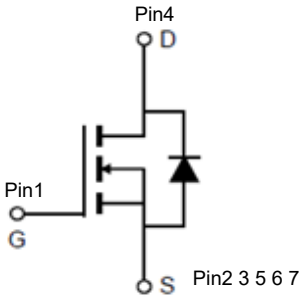
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	1.78mΩ@10V	320A

TO-263-7L



Schematic diagram



Feature

- Excellent Gate Charge x $R_{DS(ON)}$ Product(FOM)
- Split Gate Trench Technology
- Extremely Low On-Resistance $R_{DS(on)}$

Application

- DC/DC Converter
- Power Management Switches
- BLDC Motor drive systems
- Battery Management

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT018N10NTQ	TO-263-7L	T018N10N	Reel&Tape	N/A	N/A	800pcs

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	100	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25℃	I_D	320	A
	T_C = 100℃		208	
Pulsed Drain Current		I_{DM}	1176	A
Single Pulsed Avalanche Energ		E_{AS}	1936	mJ
Power Dissipation	T_C = 25℃	P_D	250	W
Thermal Resistance From Junction To Ambient		$R_{\theta JA}$	42	℃/W
Thermal Resistance From Junction To Case		$R_{\theta JC}$	0.5	℃/W
Operating Junction And Storage Temperature		T_J,T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V,V_{GS} = 0V T_J= 25℃			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	2.9	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 100A		1.78	2	mΩ
Forward Transconductance	g_{fs}	V_{DS} = 5V, I_D = 100A		238		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 50V, V_{GS} = 0V, f = 1MHz		10120		pF
Output Capacitance	C_{oss}			1360		
Reverse Transfer Capacitance	C_{rss}			50		
Gate Resistance	R_G	f=1MHz		1.2		Ω
Switching Characteristics[5]						
Total Gate Charge	Q_g	V_{DS} = 50V, V_{GS} = 10V, I_D = 50A		175		nC
Gate-Source Charge	Q_{gs}			48		
Gate-Drain Charge	Q_{gd}			53		
Turn-On Delay Time	$t_{d(on)}$	V_{DS} = 50V, V_{GS} = 10V, R_L= 6Ω		85		ns
Turn-On Rise Time	t_r			138		
Turn-Off Delay Time	$t_{d(off)}$			93		
Turn-Off Fall Time	t_f			98		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 100A		0.8	1.2	V
Reverse Recovery Time	t_{rr}	I_F= 50A,dI/dt=100A/us		80		ns
Reverse Recovery Charge	Q_{rr}			180		nC

Typical Characteristics

Fig.1 Typ. transfer characteristics

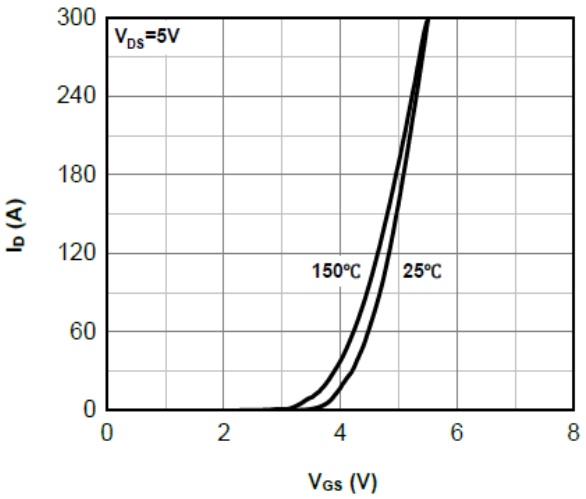


Fig.2 Typ. output characteristics

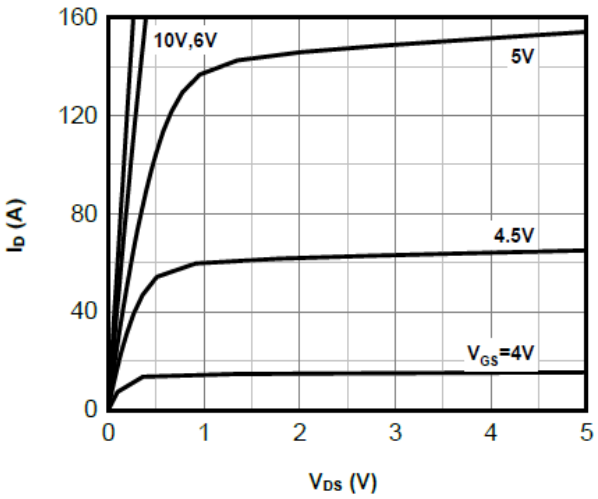


Fig.3 Normalized on-resistance vs drain current

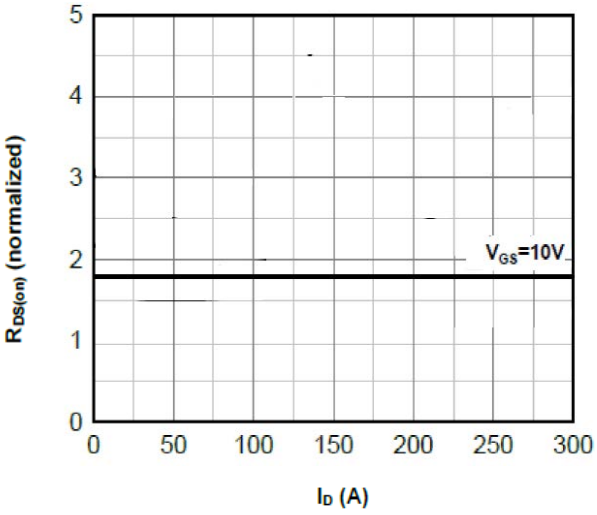


Fig.4 Typ. on-resistance vs gate-source voltage

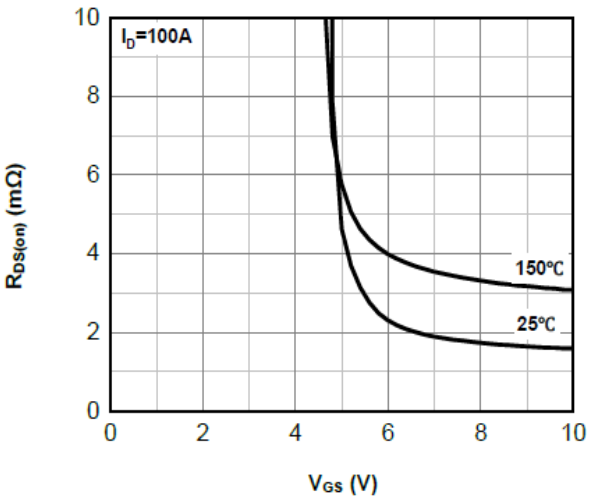


Fig.5 Normalized on-resistance vs junction temperature

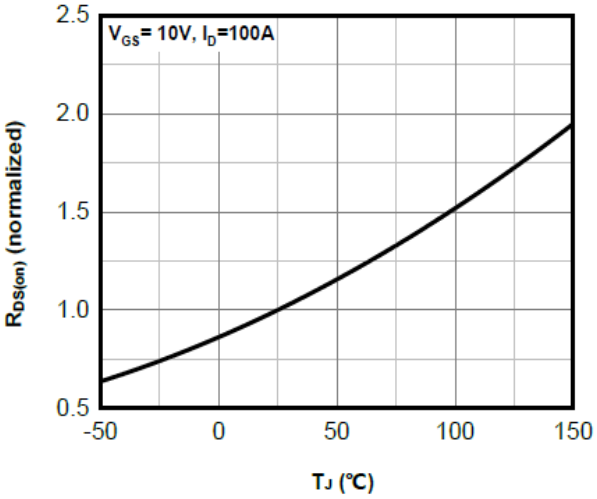
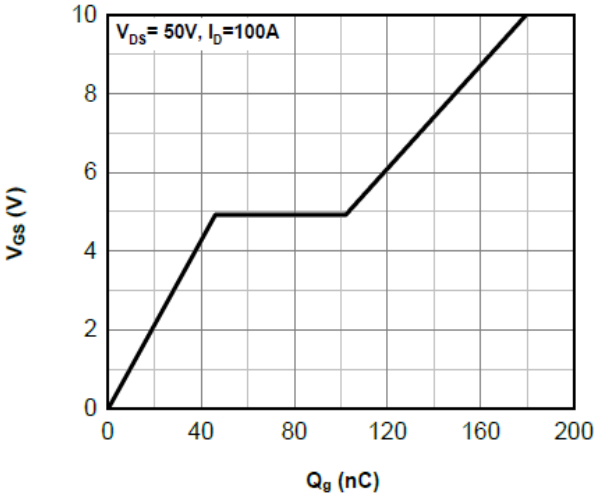


Fig.6 Typ. gate charge



Typical Characteristics

Fig.7 Typ. forward characteristics of body diode

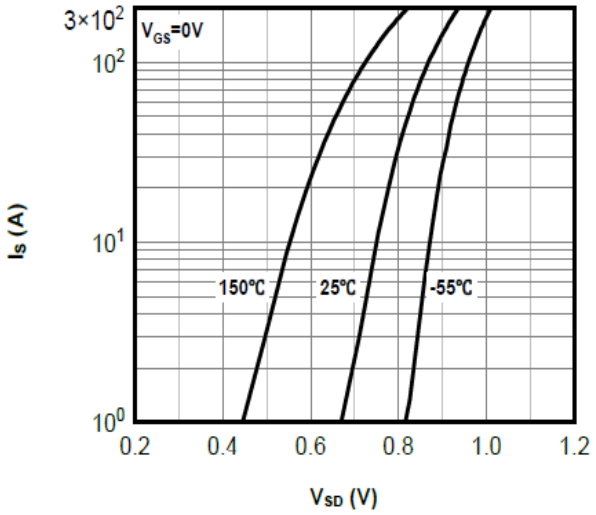


Fig.8 Safe operating area

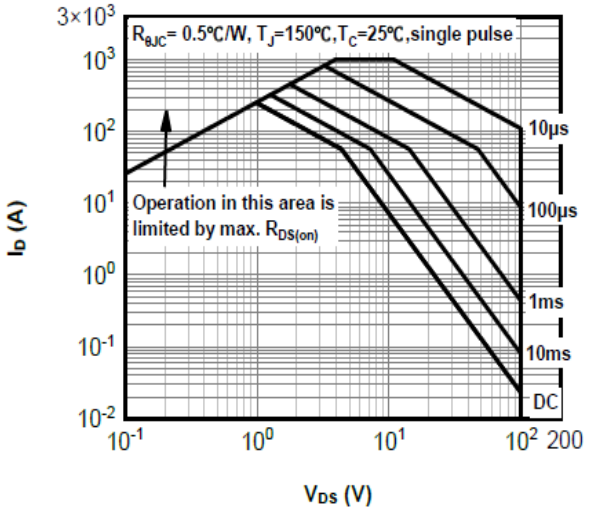


Fig.9 Typ. Capacitance

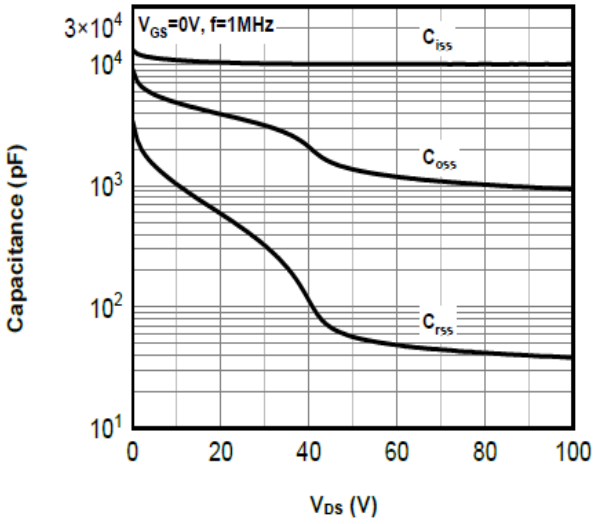


Fig.10 Single pulse maximum power dissipation

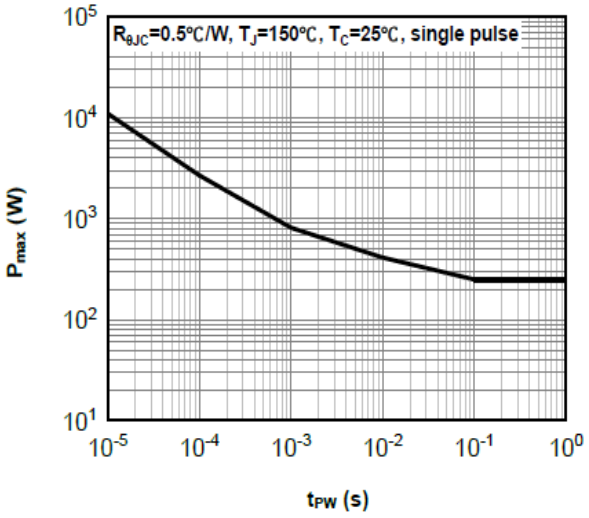


Fig.11 Max. power dissipation vs case temperature

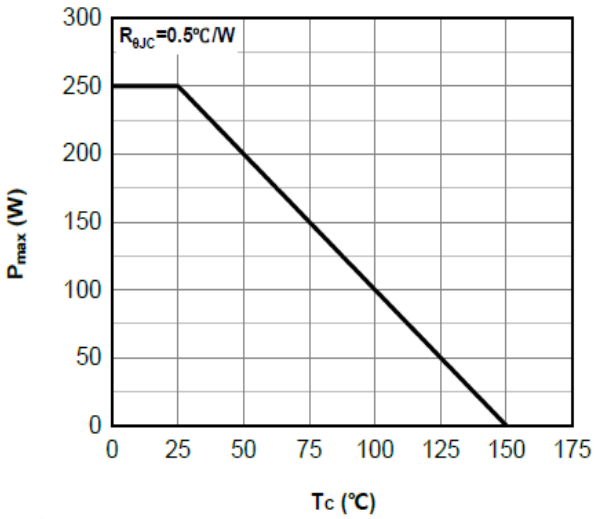
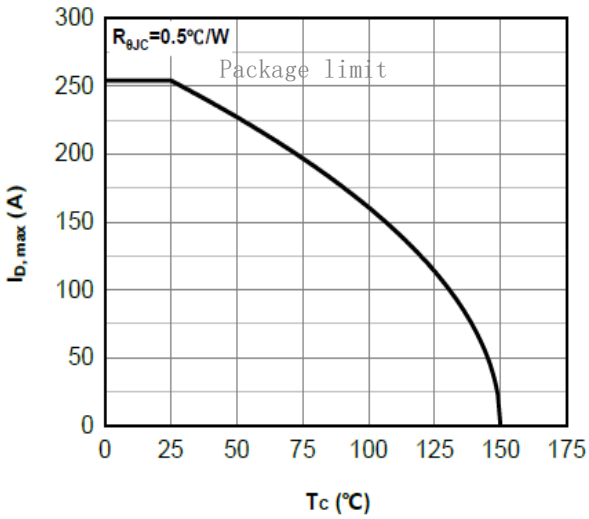


Fig.12 Max. continuous drain current vs case temperature



Typical Characteristics

Fig.13 Normalized $V_{(BR)DSS}$ vs junction temperature

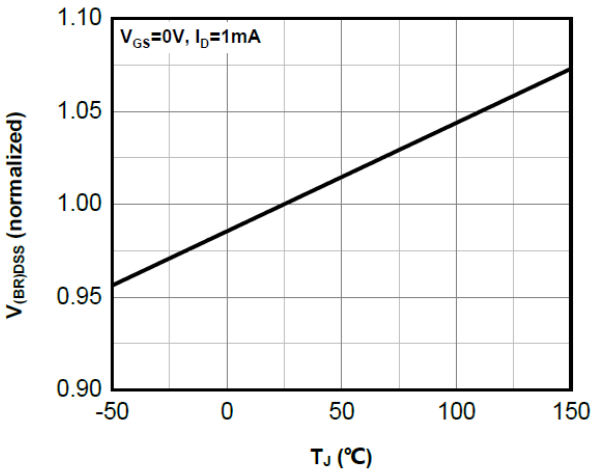


Fig.14 Normalized $V_{GS(th)}$ vs junction temperature

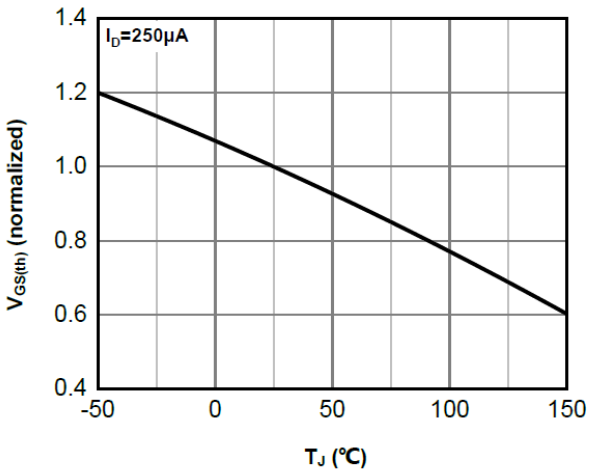
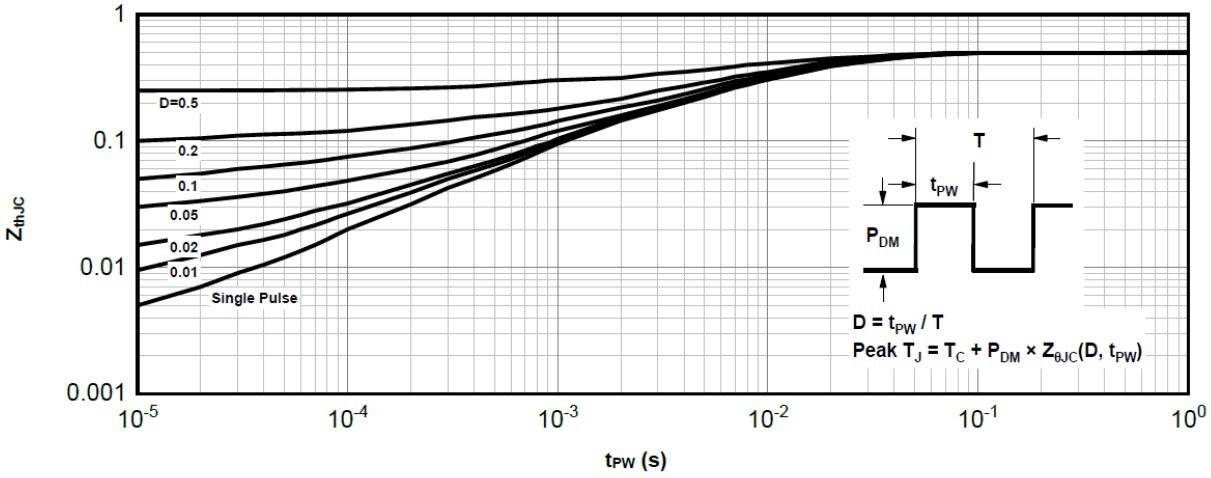
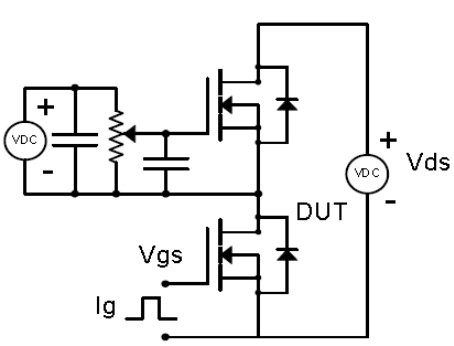


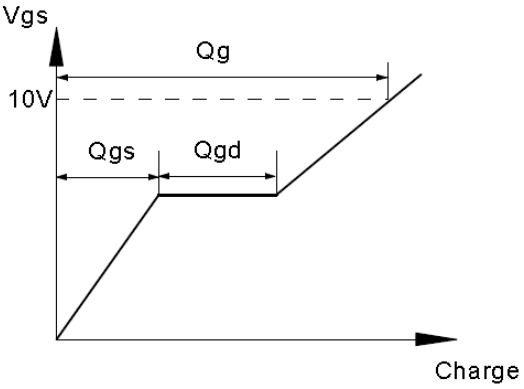
Fig.15 Transient thermal impedance from junction to case



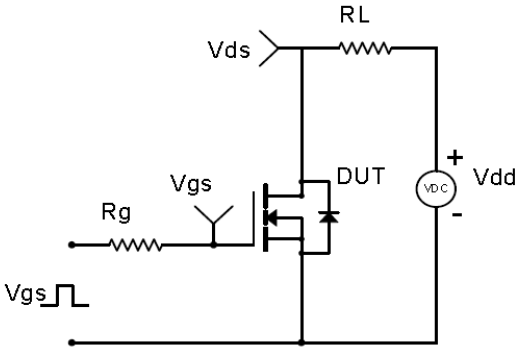
Test Circuit

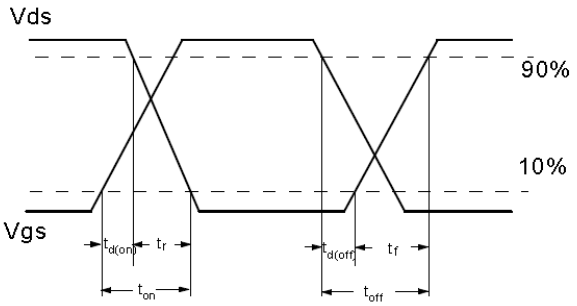
Gate Charge Test Circuit & Waveform



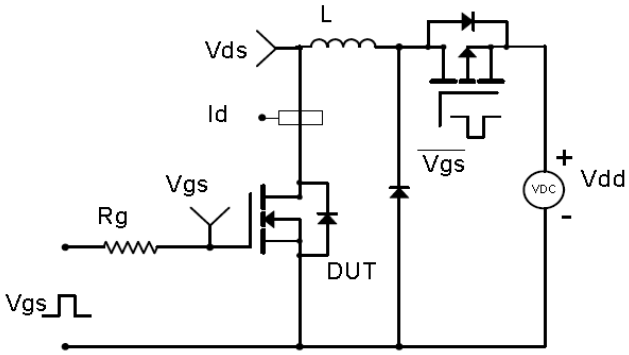


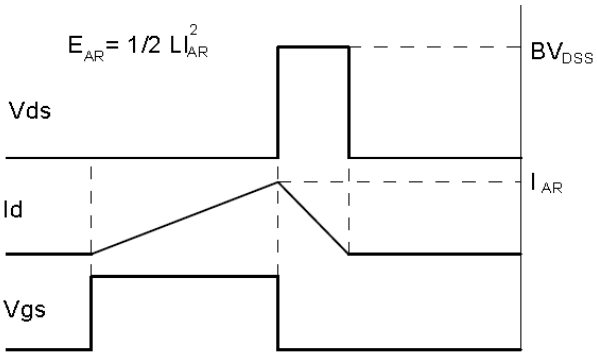
Resistive Switching Test Circuit & Waveforms



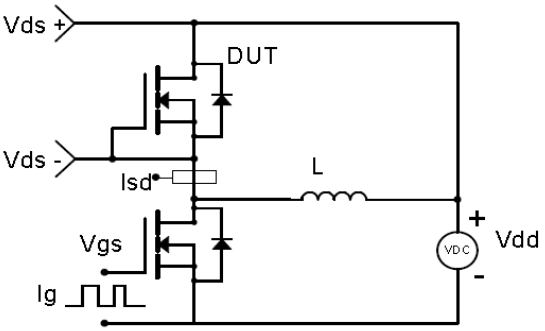


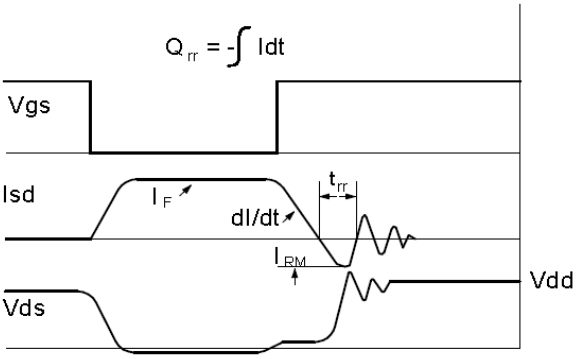
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



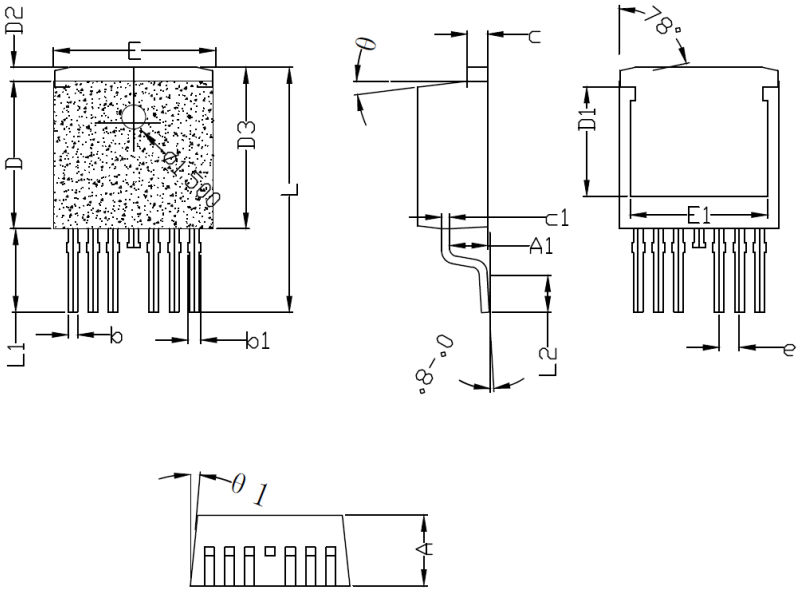


Diode Recovery Test Circuit & Waveforms





TO-263-7L Package Information



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min.	Max.		Min.	Max.
A	4.2	4.6	D3	9.9	10.3
A1	2.3	2.5	E	9.8	10.2
b	0.5	0.7	E1	8.5	8.7
b1	0.6	0.8	L	14.9	15.4
c	1.25	1.35	L1	4.8	5.2
c1	0.45	0.55	L2	2.3	2.7
D	9.05	9.45	e	1.27BSC	
D1	6.65	7.05	θ	5°	10°
D2	0.65	1.05	θ1	3°	8°

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