

Product Summary

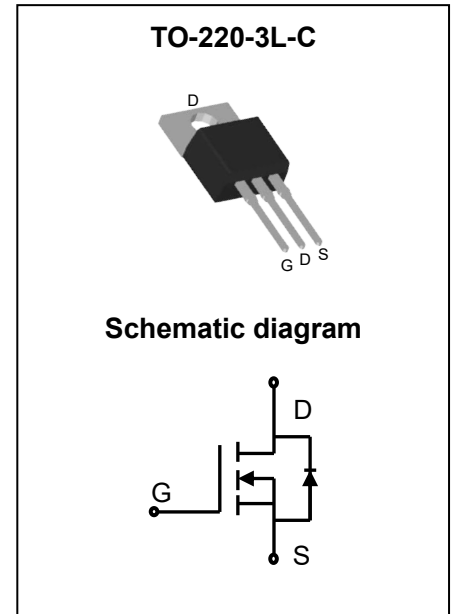
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
80V	4.7mΩ@10V	120A

Feature

- Split Gate Trench Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application
- Motor Driving
- Power Management



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT1933NTB	TO-220-3L	GPT1933	Tube	-	-	50pcs

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit	
Drain - Source Voltage	V_{DS}	80	V	
Gate - Source Voltage	V_{GS}	±20	V	
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	120	A
	$T_C = 100^\circ\text{C}$	I_D	76	A
Pulsed Drain Current ²	I_{DM}	480	A	
Single Pulsed Avalanche Current ³	I_{AS}	35	A	
Single Pulsed Avalanche Energy ³	E_{AS}	612	mJ	
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	144	W
Thermal Resistance from Junction to Ambient ⁶	$R_{\theta JA}$	58	$^\circ\text{C/W}$	
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.87	$^\circ\text{C/W}$	
Junction Temperature	T_J	150	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$	

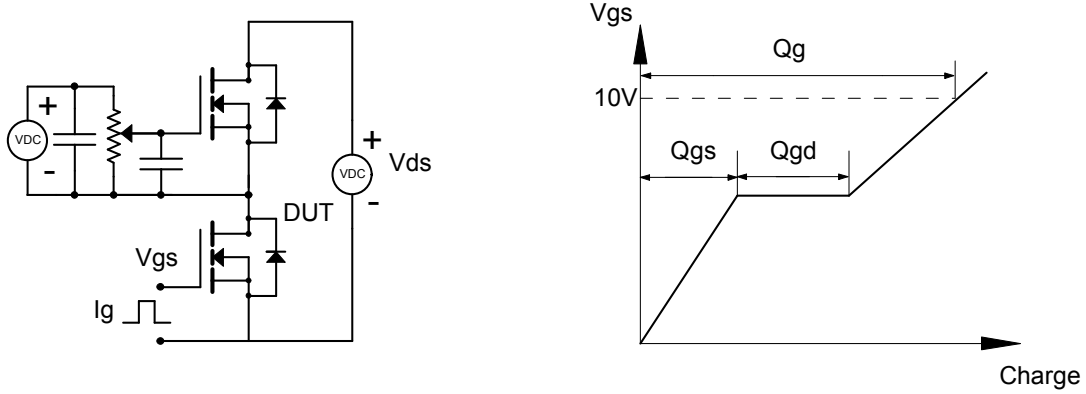
MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	80			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	2.6	4	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 50A		4.7	7.0	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 40V, V _{GS} = 0V, f = 1MHz		3512		pF
Output Capacitance	C _{oss}			771		
Reverse Transfer Capacitance	C _{rss}			28		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		4.9		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 40V, V _{GS} = 10V, I _D = 50A		59		nC
Gate-source Charge	Q _{gs}			15		
Gate-drain Charge	Q _{gd}			14		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 40V, V _{GS} = 10V, I _D = 20A, R _G = 3Ω		16		ns
Turn-on Rise Time	t _r			13		
Turn-off Delay Time	t _{d(off)}			32		
Turn-off Fall Time	t _f			14		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 50A			1.2	V

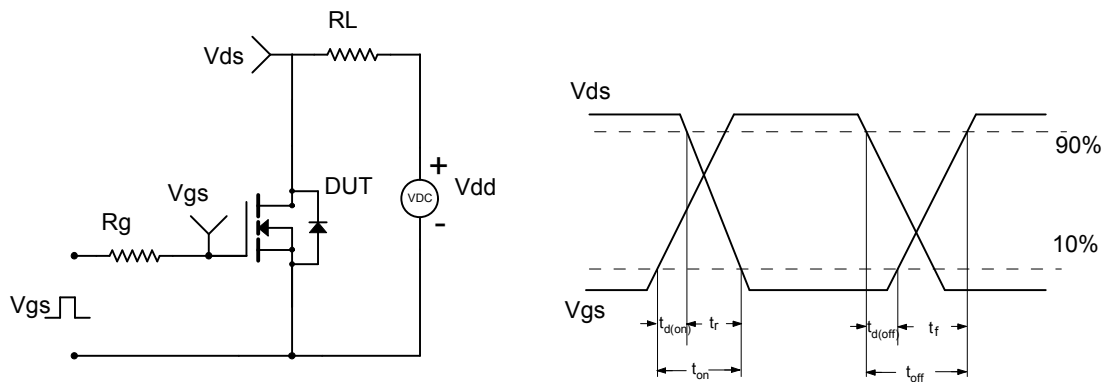
Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.E_{AS} condition: V_{DD} = 40V, V_{GS} = 10V, L = 1.0mH, R_G = 25Ω Starting T_J = 25°C.
- 4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 5.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.And device mounted on a large heatsink
- 6.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

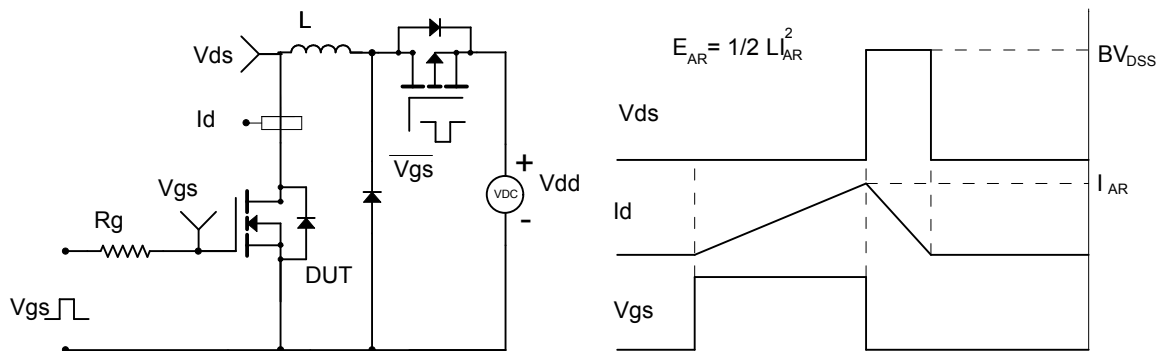
Gate Charge Test Circuit & Waveform



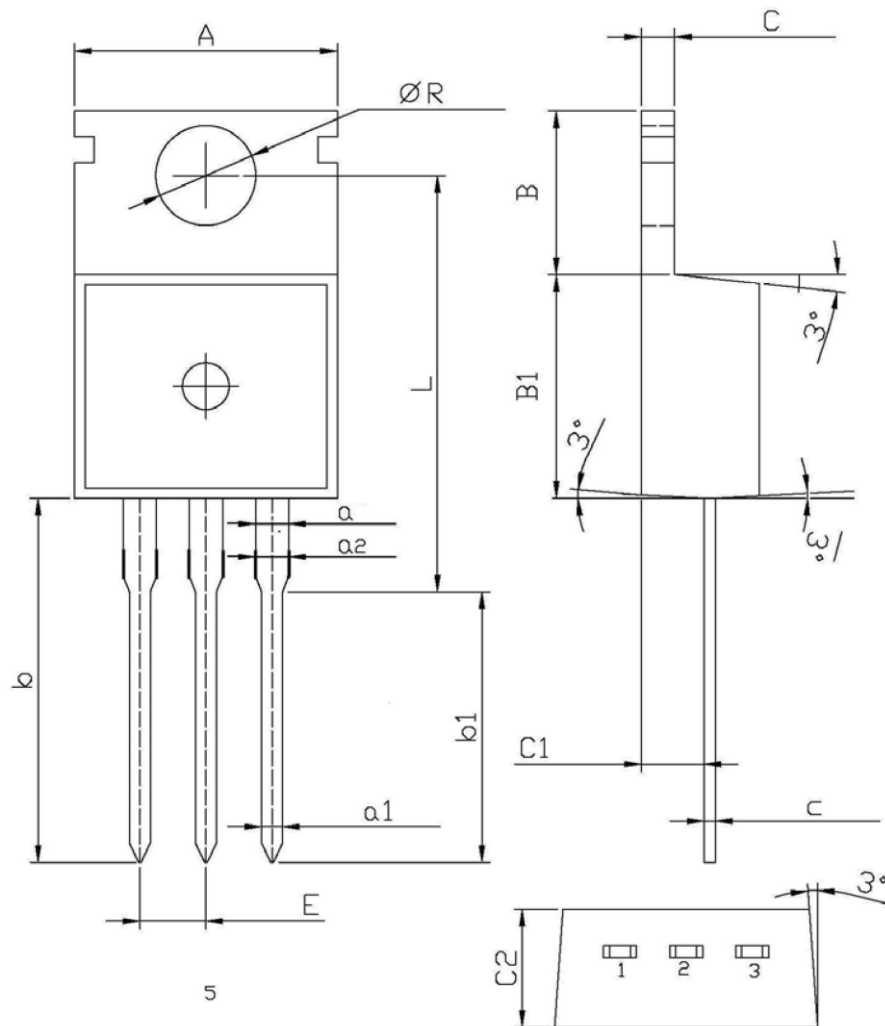
Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



TO-220-3L-C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	9.800	10.200	0.386	0.402
R	3.560	3.640	0.140	0.143
L	15.700	16.100	0.618	0.634
b	12.600	13.600	0.496	0.535
b1	9.600	10.600	0.378	0.417
a	1.220	1.320	0.048	0.052
E	2.340	2.740	0.092	0.108
a2	1.250	1.450	0.049	0.057
C	1.200	1.400	0.047	0.055
B	5.900	6.700	0.232	0.264
B1	9.000	9.400	0.354	0.370
C1	2.200	2.600	0.087	0.102
a1	0.700	0.900	0.028	0.035
c	0.400	0.600	0.016	0.024
C2	4.300	4.700	0.169	0.185