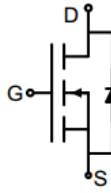
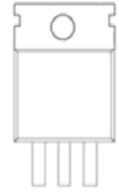



N-Channel Enhancement Mode Power MOSFET

<p>Description</p> <p>The GT135N10T uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.</p> <p>General Features</p> <ul style="list-style-type: none"> ● V_{DS} 100V ● I_D (at $V_{GS} = 10V$) 60A ● $R_{DS(ON)}$ (at $V_{GS} = 10V$) < 13.5mΩ ● $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) < 20mΩ ● 100% Avalanche Tested ● RoHS Compliant <p>Application</p> <ul style="list-style-type: none"> ● Synchronous rectifiers ● Power switch ● DC/DC converters 		 <p>Schematic Diagram</p>  <p>Marking and pin assignment</p>  <p>TO-220</p>	
Device	Package	Marking	Packaging
GT135N10T	TO-220	GT135N10	50pcs/Tube

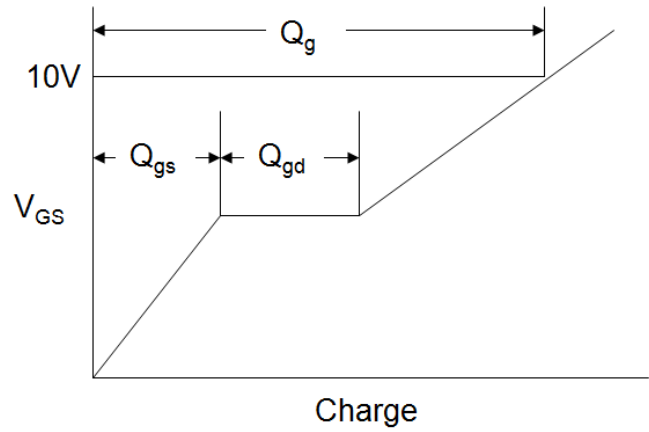
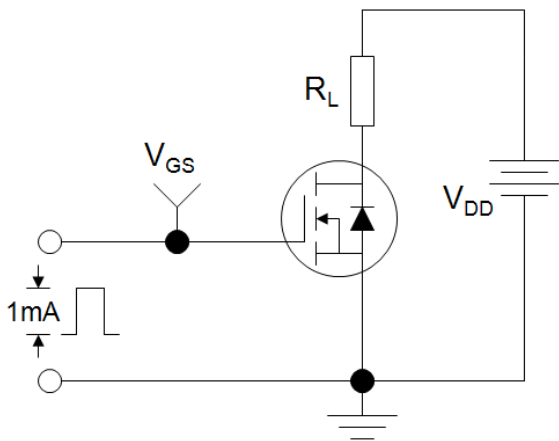
Absolute Maximum Ratings $T_C = 25^{\circ}C$, unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Continuous Drain Current	I_D	60	A
Pulsed Drain Current (note1)	I_{DM}	240	A
Gate-Source Voltage	V_{GS}	± 20	V
Power Dissipation	P_D	105	W
Single pulse avalanche energy (note2)	E_{AS}	285	mJ
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150	$^{\circ}C$
Thermal Resistance			
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62.5	$^{\circ}C/W$
Thermal Resistance, Junction-to-Case	R_{thJC}	1.43	$^{\circ}C/W$

Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	100	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	--	--	1	μA
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1	1.5	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 6A$	--	10.5	13.5	m Ω
		$V_{GS} = 4.5V, I_D = 6A$	--	16.5	20	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=30A$	--	45	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 50V,$ $f = 1.0\text{MHz}$	--	2500	--	pF
Output Capacitance	C_{oss}		--	273	--	
Reverse Transfer Capacitance	C_{rss}		--	27	--	
Total Gate Charge	Q_g	$V_{DD} = 50V,$ $I_D = 30A,$ $V_{GS} = 10V$	--	37	--	nC
Gate-Source Charge	Q_{gs}		--	14	--	
Gate-Drain Charge	Q_{gd}		--	7.5	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 50V,$ $I_D = 30A,$ $R_G = 4.7\Omega$	--	13	--	nS
Turn-on Rise Time	t_r		--	8.5	--	
Turn-off Delay Time	$t_{d(off)}$		--	29	--	
Turn-off Fall Time	t_f		--	4	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C = 25^\circ\text{C}$	--	--	60	A
Body Diode Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 60A, V_{GS} = 0V$	--	--	1.2	V

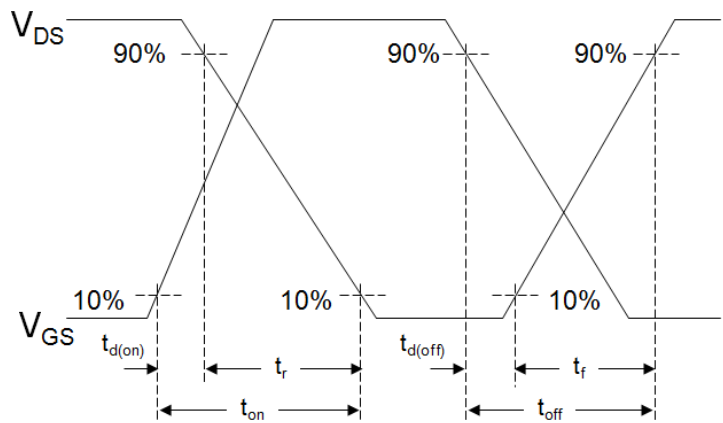
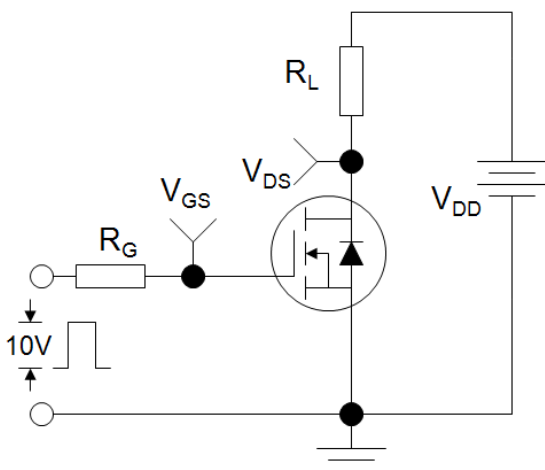
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition : $T_J=25, V^\circ\text{C}$ $DD=50V, VG=10V, L=0.5mH, R_g=25\Omega$
3. Identical low side and high side switch with identical R_G

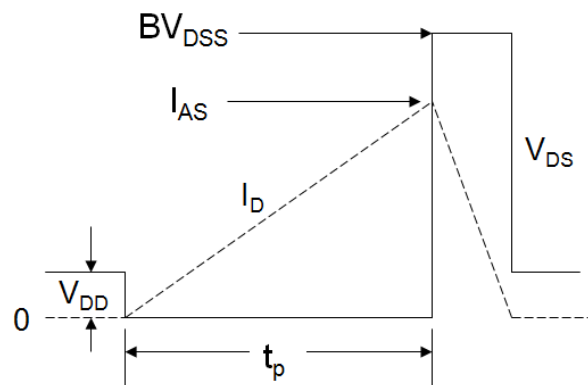
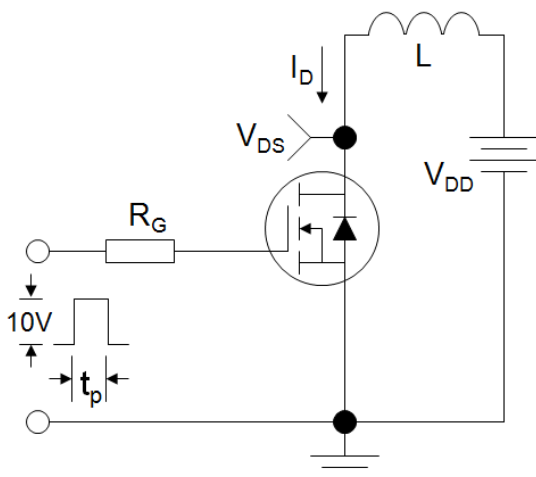
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

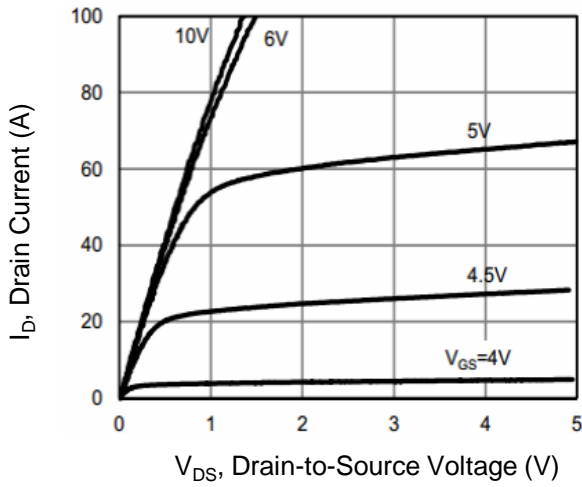


Figure 2. Transfer Characteristics

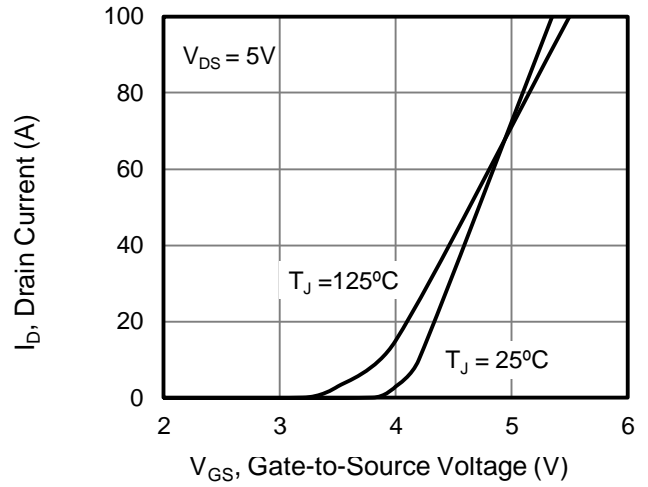


Figure 3. $R_{DS(on)}$ -Drain Current

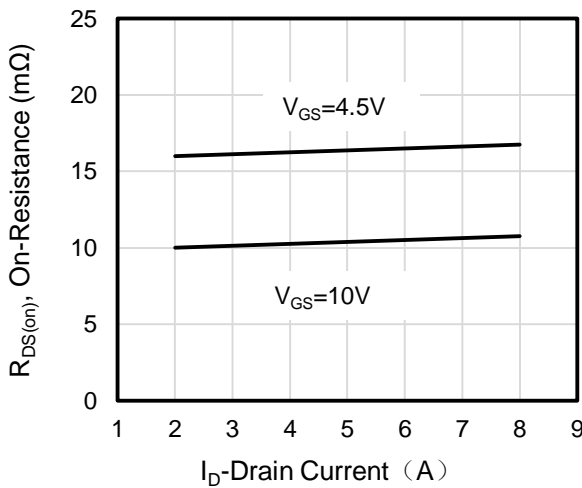


Figure 4. Gate Charge

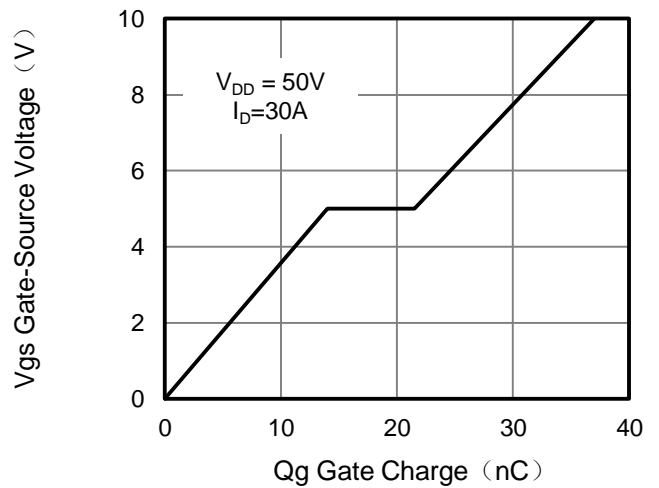


Figure 5. Capacitance vs Vds

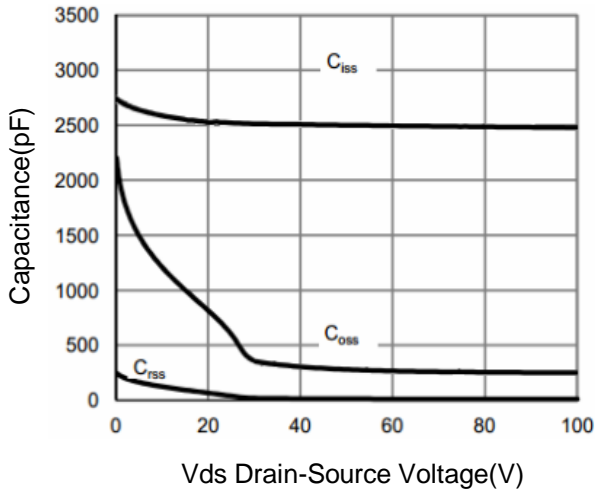
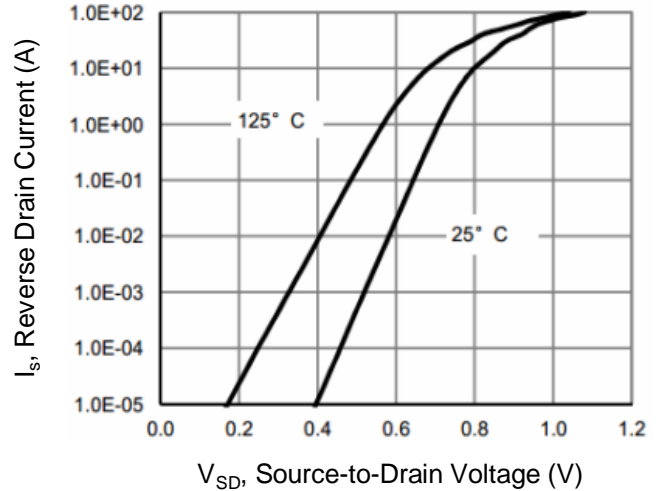


Figure 6. Source-Drain Diode Forward



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Drain-Source On-Resistance

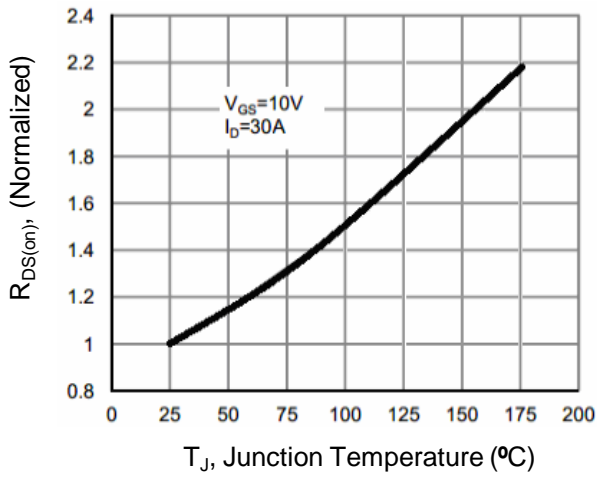


Figure 8. Safe Operation Area

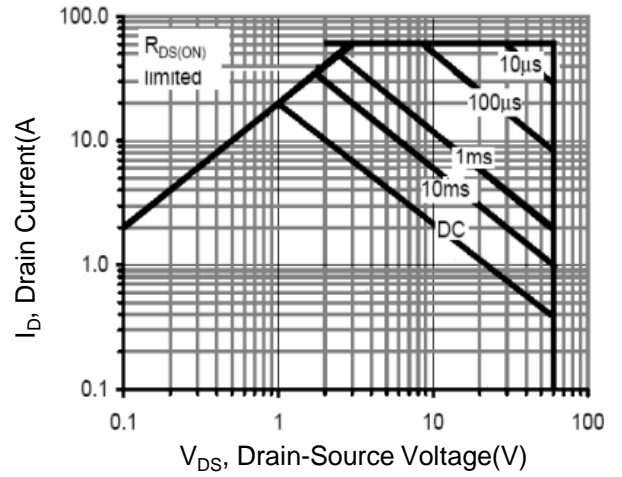
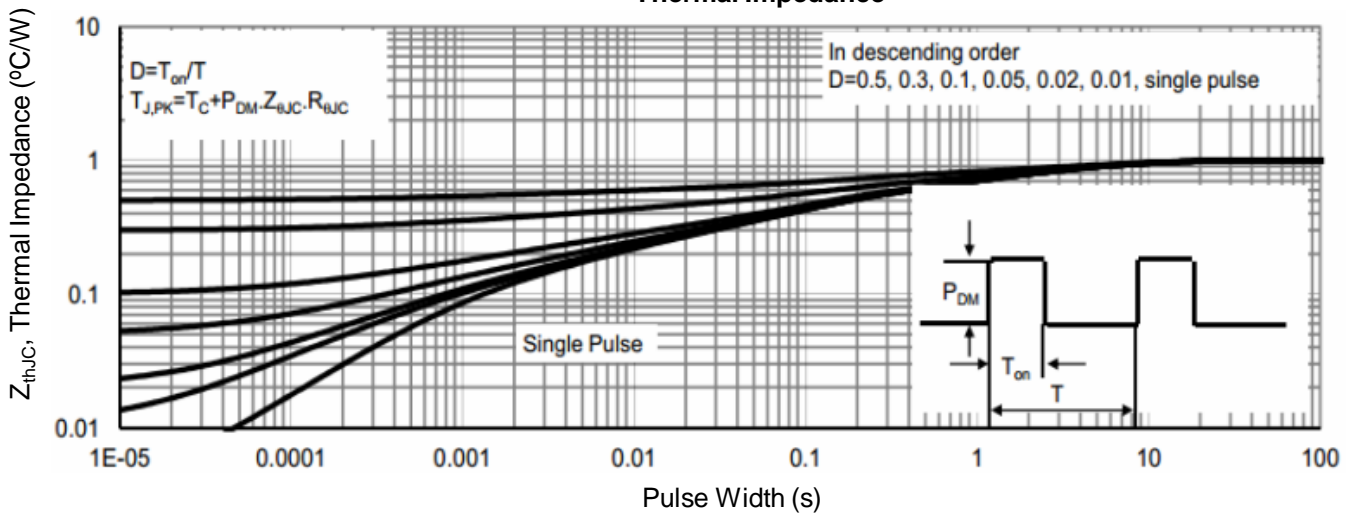
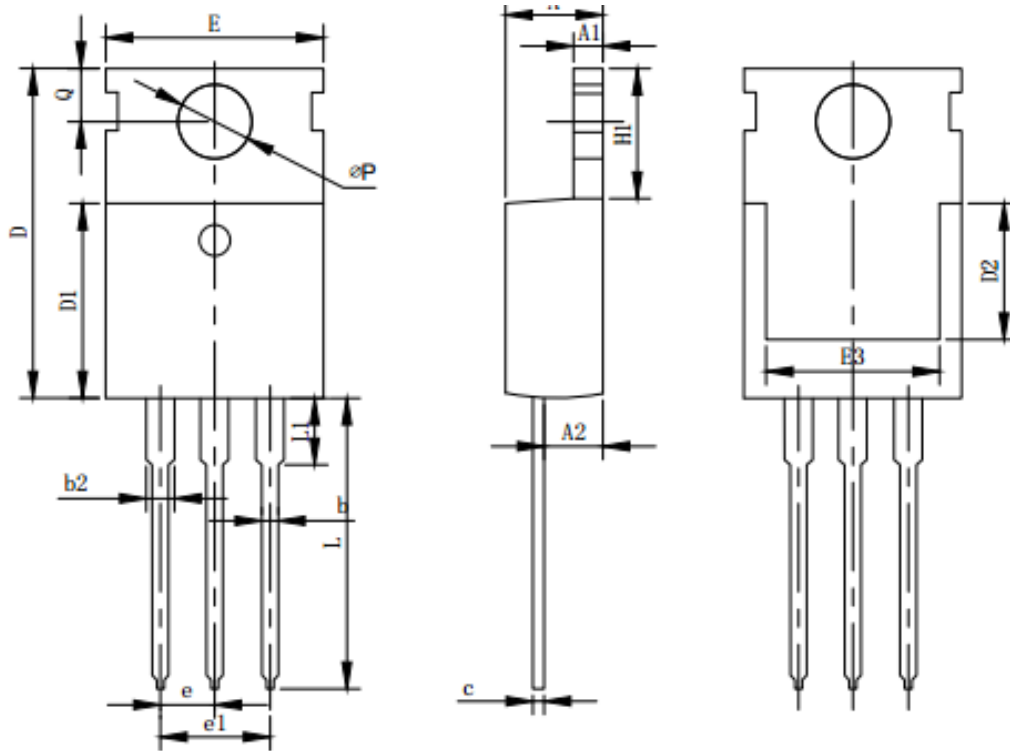


Figure 9. Normalized Maximum Transient Thermal Impedance



TO-220 Package Information



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	4.37	4.57	4.7
A1	1.25	1.3	1.4
A2	2.2	2.4	2.6
b	0.7	0.8	0.95
b2	1.7	1.27	1.47
c	0.45	0.5	0.6
D	15.1	15.6	16.1
D1	8.8	9.1	9.4
D2	5.5		
E	9.7	10	10.3
e	2.54BSC		
e1	5.08BSC		
H1	6.25	6.5	6.85
L	12.75	13.5	13.8
L1		3.1	3.4
øP	3.4	3.6	3.8
Q	2.6	2.8	3

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