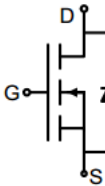
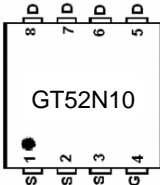
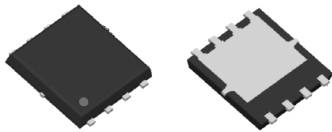


## N-Channel Enhancement Mode Power MOSFET

<p><b>Description</b></p> <p>The GT52N10D5 uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math>, low gate charge. It can be used in a wide variety of applications.</p> <p><b>General Features</b></p> <ul style="list-style-type: none"> <li>● <math>V_{DS}</math> 100V</li> <li>● <math>I_D</math> (at <math>V_{GS} = 10V</math>) 71A</li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = 10V</math>) &lt; 7.5m<math>\Omega</math></li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = 4.5V</math>) &lt; 10m<math>\Omega</math></li> <li>● 100% Avalanche Tested</li> <li>● RoHS Compliant</li> </ul> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>● Power switch</li> <li>● DC/DC converters</li> <li>● Synchronous Rectification</li> </ul>		 <p>Schematic diagram</p>  <p>Marking and pin assignment</p>  <p>DFN5*6</p>	
<b>Device</b>	<b>Package</b>	<b>Marking</b>	<b>Packaging</b>
GT52N10D5	DFN5*6	GT52N10	5000pcs/Reel

<b>Absolute Maximum Ratings</b> $T_C = 25^{\circ}C$ , unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	100	V
Continuous Drain Current	$I_D$	71	A
Pulsed Drain Current (note1)	$I_{DM}$	284	A
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Power Dissipation	$P_D$	79	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 To 150	$^{\circ}C$

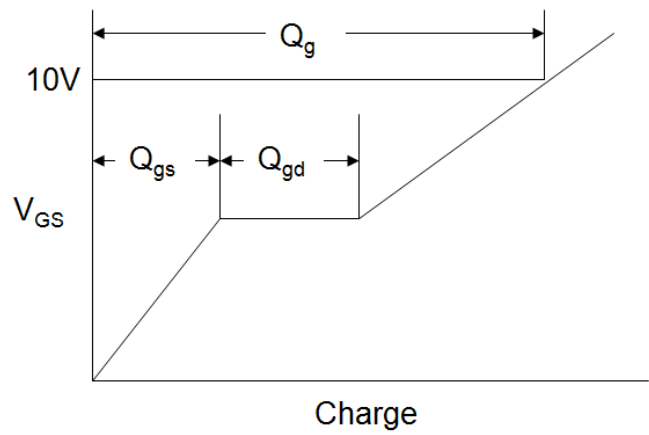
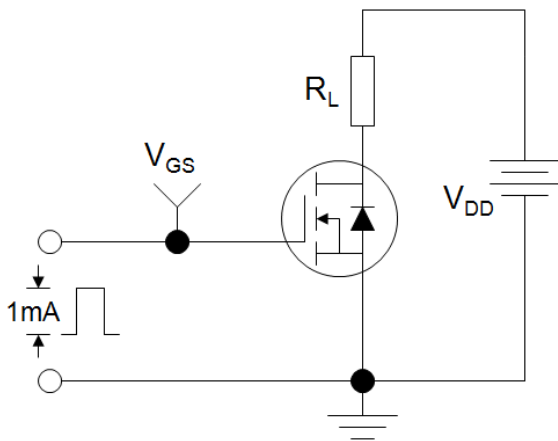
<b>Thermal Resistance</b>			
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	47	$^{\circ}C/W$
Thermal Resistance, Junction-to-Case	$R_{thJC}$	1.58	$^{\circ}C/W$

Specifications $T_J = 25^\circ\text{C}$ , unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 100V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	--	--	1	$\mu A$
Gate-Source Leakage	$I_{GSS}$	$V_{GS} = \pm 20V$	--	--	$\pm 100$	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.65	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 50A$	--	6.5	7.5	m $\Omega$
		$V_{GS} = 4.5V, I_D = 50A$	--	8.5	10	
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=30A$	--	91	--	S
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V,$ $V_{DS} = 50V,$ $f = 1.0\text{MHz}$	--	2626	--	pF
Output Capacitance	$C_{oss}$		--	457	--	
Reverse Transfer Capacitance	$C_{rss}$		--	38	--	
Total Gate Charge	$Q_g$	$V_{DD} = 50V,$ $I_D = 50A,$ $V_{GS} = 10V$	--	44.5	--	nC
Gate-Source Charge	$Q_{gs}$		--	10.4	--	
Gate-Drain Charge	$Q_{gd}$		--	6.8	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 50V,$ $I_D = 50A,$ $R_G = 3\Omega$	--	10.3	--	ns
Turn-on Rise Time	$t_r$		--	62	--	
Turn-off Delay Time	$t_{d(off)}$		--	30	--	
Turn-off Fall Time	$t_f$		--	98	--	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$	$T_C = 25^\circ\text{C}$	--	--	71	A
Body Diode Voltage	$V_{SD}$	$T_J = 25^\circ\text{C}, I_{SD} = 50A, V_{GS} = 0V$	--	--	1.2	V

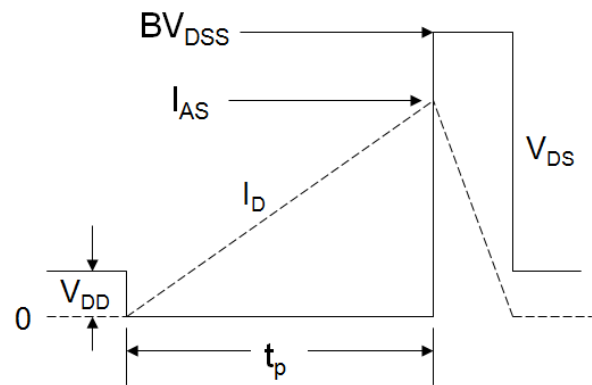
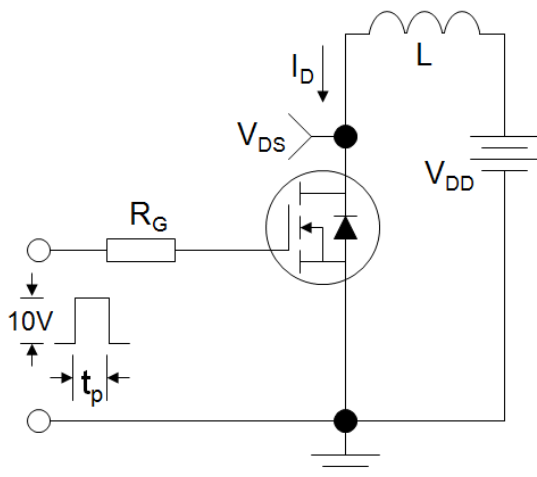
**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical  $R_G$

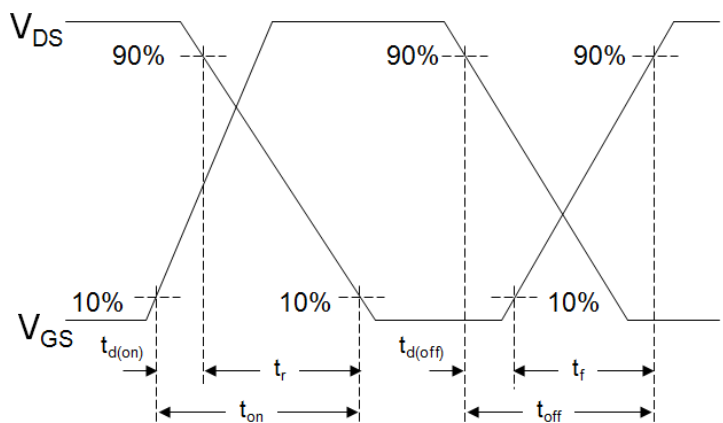
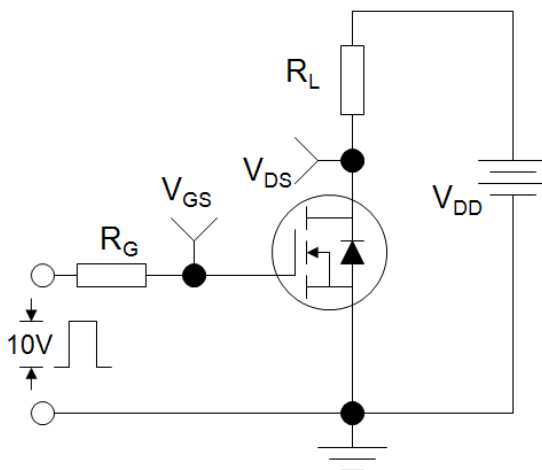
Gate Charge Test Circuit



EAS Test Circuit



Switch Time Test Circuit



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

Figure 1. Output Characteristics

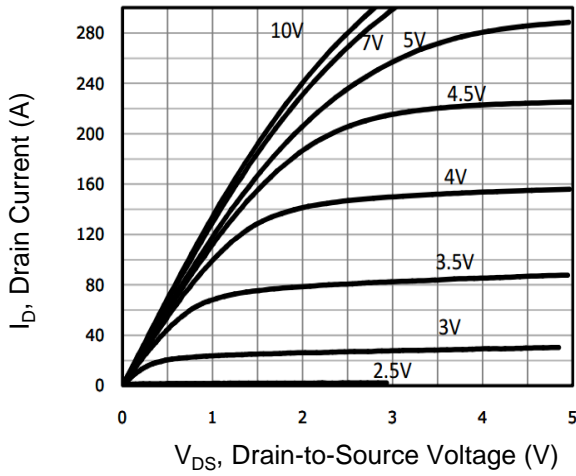


Figure 2. Transfer Characteristics

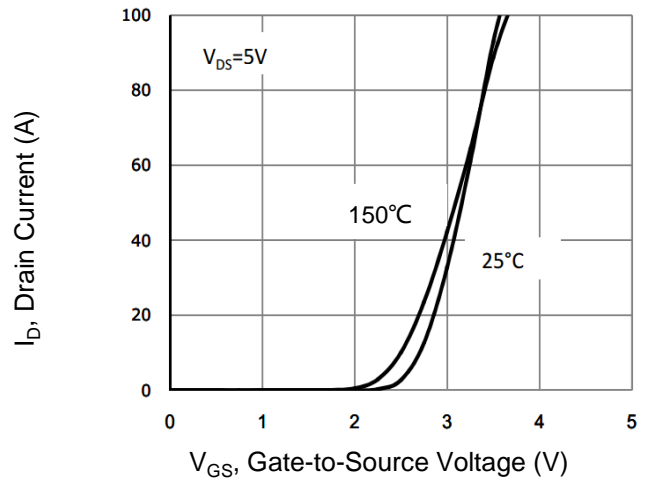


Figure 3.  $R_{DS(on)}$ -Drain Current

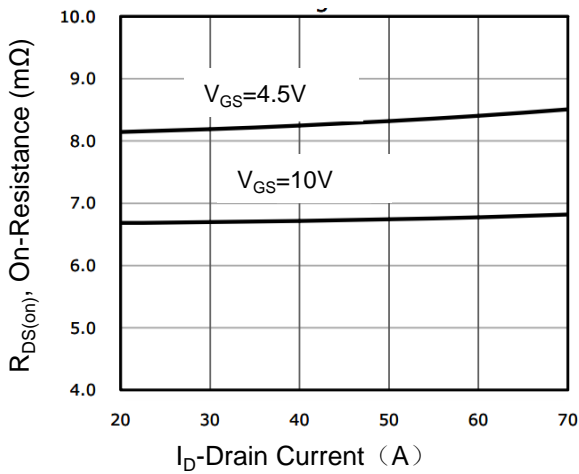


Figure 4. Gate Charge

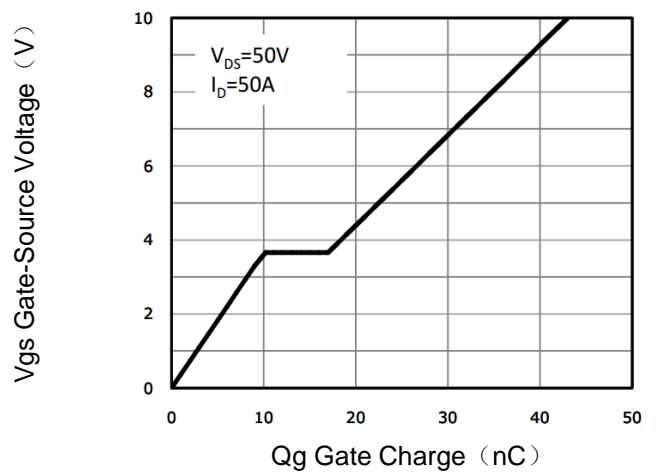


Figure 5. Capacitance vs Vds

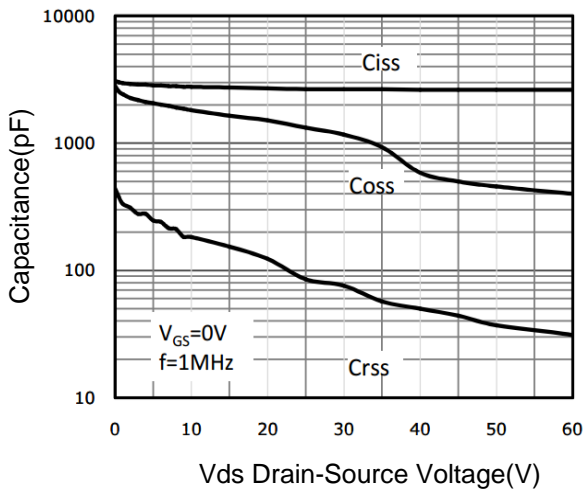
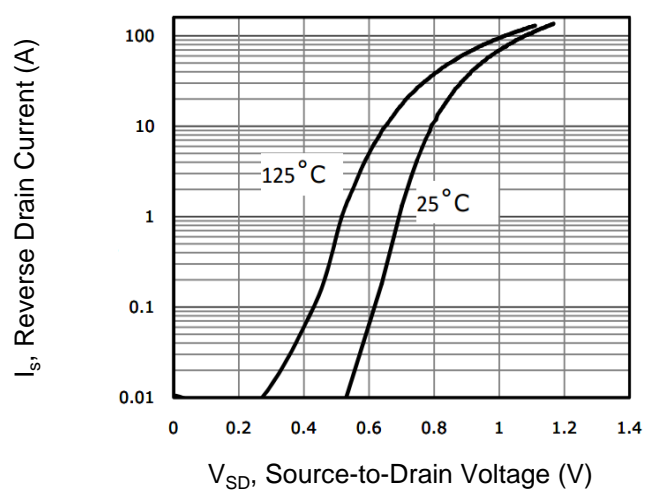


Figure 6. Source-Drain Diode Forward



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

Figure 7. Drain-Source On-Resistance

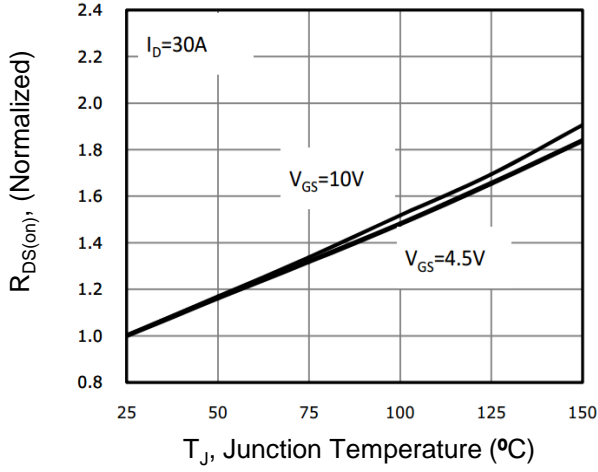


Figure 8. Safe Operation Area

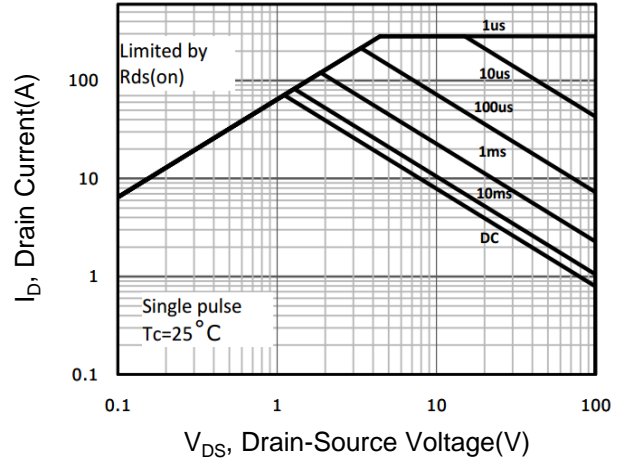
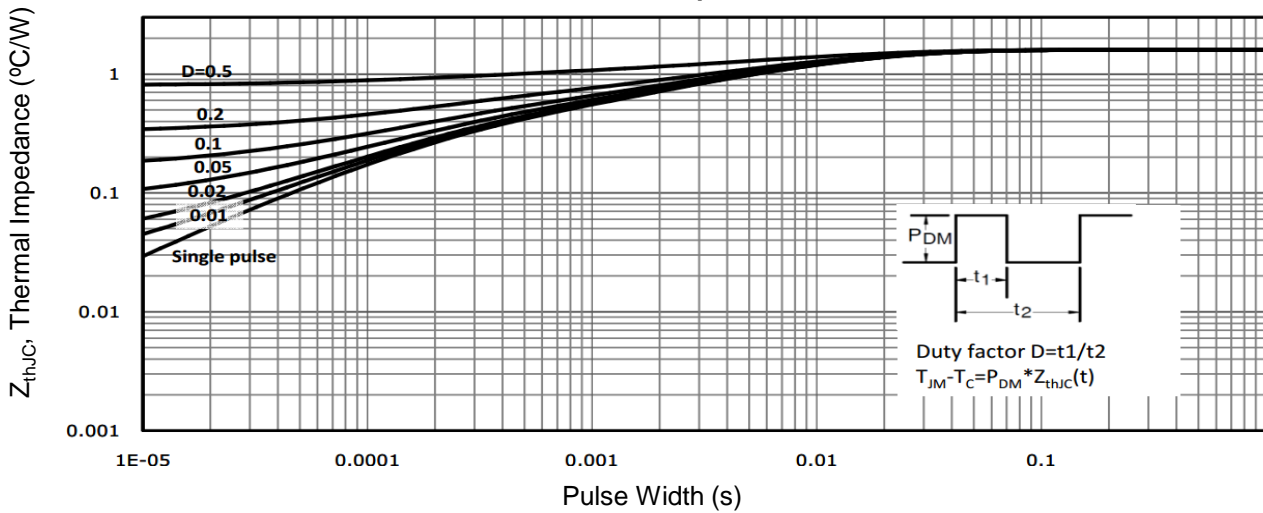
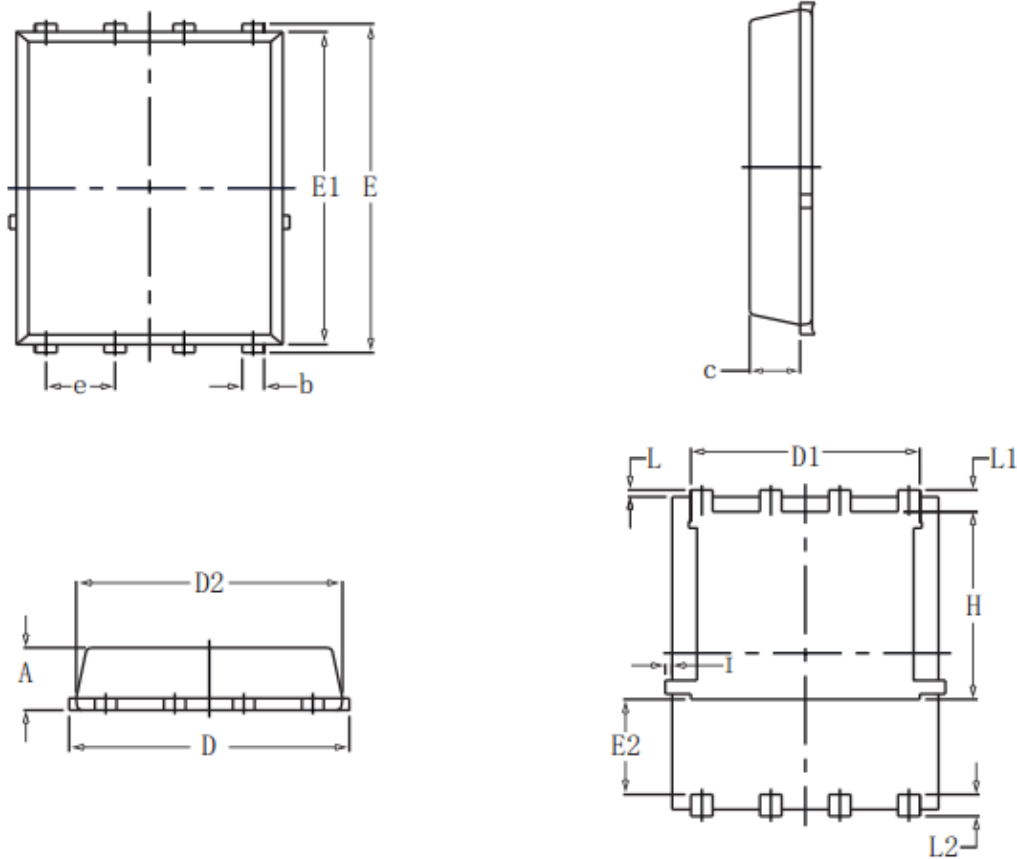


Figure 9. Normalized Maximum Transient Thermal Impedance



DFN5×6-8L Package Information



SYMBOL	COMMON			
	MM		INCH	
	MIN	MAX	MIN	MAX
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.970	0.0324	0.0382
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.59	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	-	0.0630	-
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	-	0.18	-	0.0070