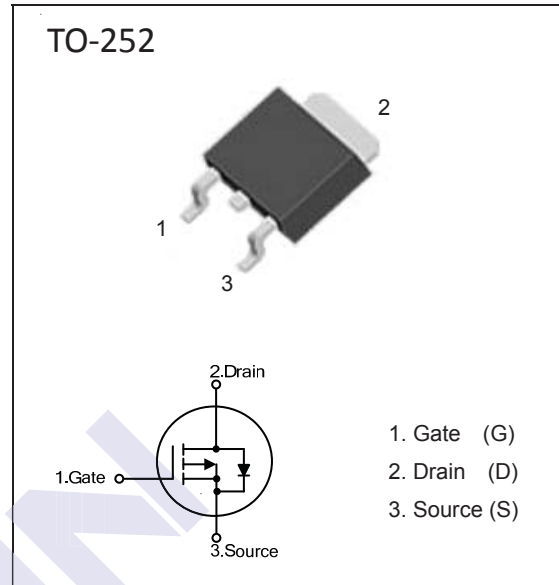


P-Channel MOSFET

NDT40P06

■ Features

- V_{DS} (V) = -60V
- I_D = -40 A
- $R_{DS(ON)} < 30m\Omega$ @ $V_{GS} = -10V$, $I_D = -8A$
- $R_{DS(ON)} < 40m\Omega$ @ $V_{GS} = -4.5V$, $I_D = -6A$

■ Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	$T_c = 25^\circ\text{C}$	-40
		$T_c = 100^\circ\text{C}$	-26
Pulsed Drain Current	I_{DM}	-140	A
Power Dissipation	P_D	72.6	W
Thermal Resistance, Junction- to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction- to-Case	$R_{\theta JC}$	1.72	
Junction Temperature	T_J	150	$^\circ\text{C}$
Junction Storage Temperature Range	T_{stg}	-55 to 150	

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating: Pulse width limited by maximum junction temperature.

P-Channel MOSFET

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■ Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -60\text{V}$, $V_{GS} = 0\text{V}$			-1	μA
		$V_{DS} = -48\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 125^\circ\text{C}$			-10	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	-1		-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10\text{V}$, $I_D = -8\text{A}$			30	m Ω
		$V_{GS} = -4.5\text{V}$, $I_D = -6\text{A}$			40	
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = -25\text{V}$, $f = 1\text{MHz}$		2595		pF
Output Capacitance	C_{oss}			162		
Reverse Transfer Capacitance	C_{rss}			115		
Total Gate Charge	Q_g	$V_{GS} = -10\text{V}$, $V_{DS} = -30\text{V}$, $I_D = -5.0\text{A}$		43.8		nC
Gate Source Charge	Q_{gs}			4.6		
Gate Drain Charge	Q_{gd}			8.3		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -30\text{V}$, $I_D = -1\text{A}$, $V_{GS} = -10\text{V}$, $R_G = 6\Omega$		25		ns
Turn-On Rise Time	t_r			13.8		
Turn-Off Delay Time	$t_{d(off)}$			148		
Turn-Off Fall Time	t_f			51		
Maximum Body-Diode Continuous Current	I_S				-40	A
Maximum Body-Diode Pulsed Current	I_{SM}				-80	
Diode Forward Voltage	V_{SD}	$I_S = -1\text{A}$, $V_{GS} = 0\text{V}$			-1	V

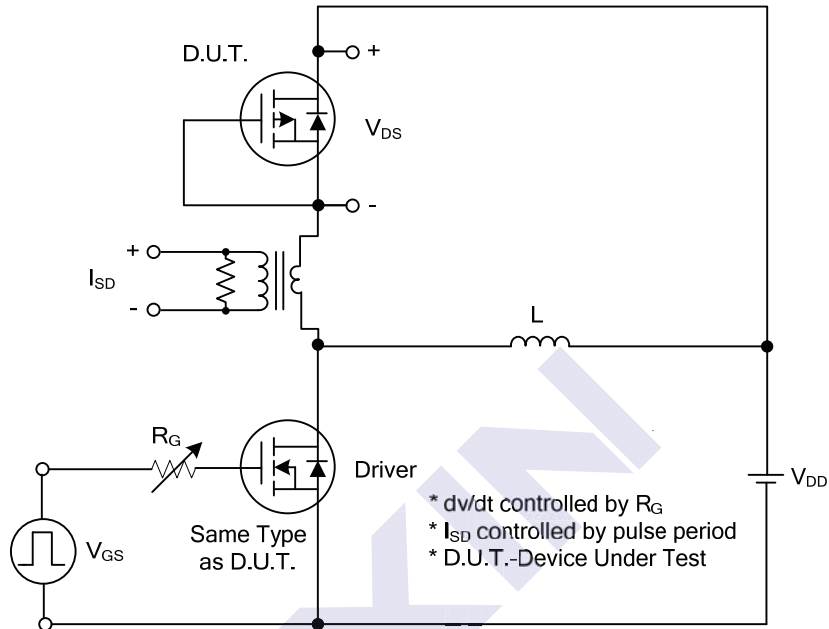
Notes 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

2. Essentially independent of operating temperature typical characteristics

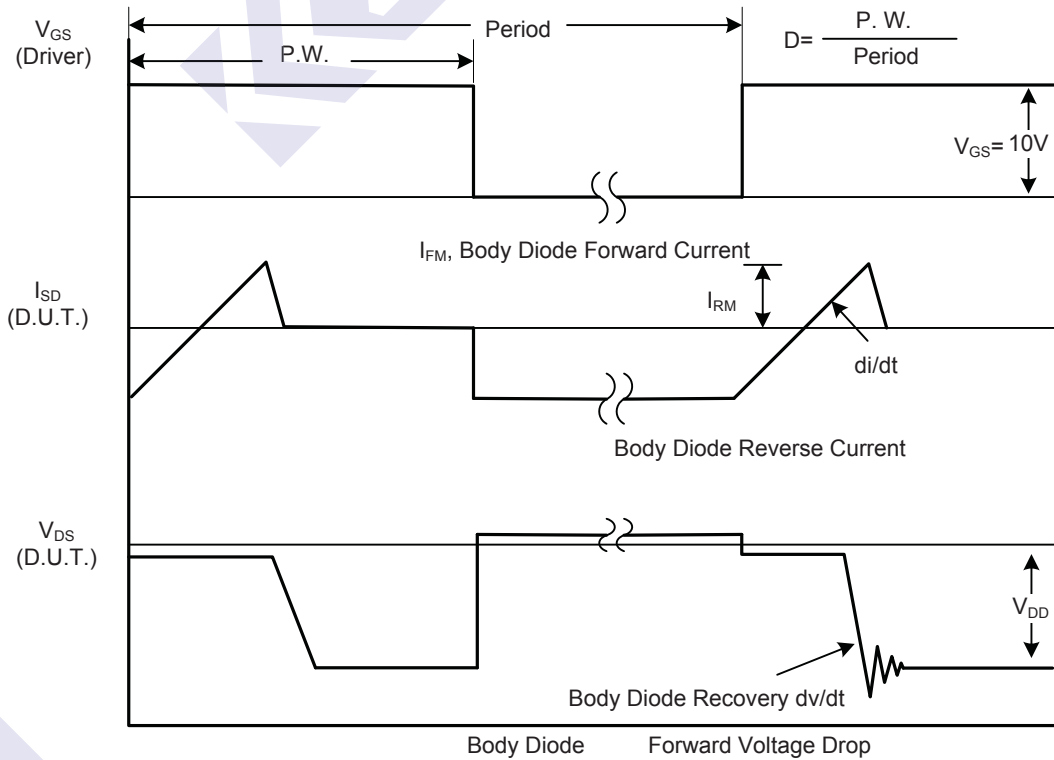
P-Channel MOSFET

NDT40P06

■ Test Circuits And Waveforms



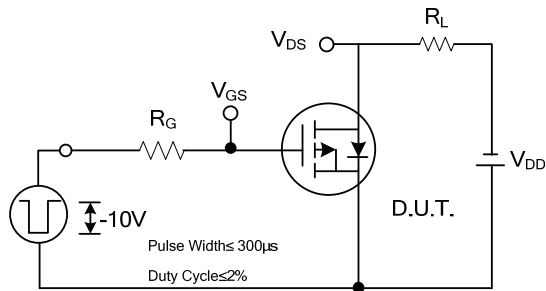
Peak Diode Recovery dv/dt Test Circuit



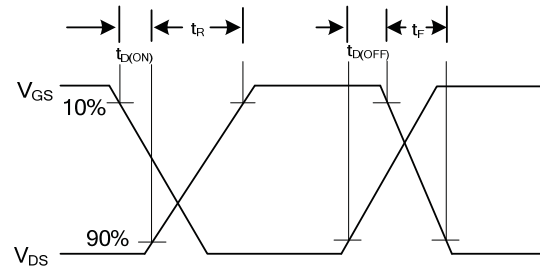
Peak Diode Recovery dv/dt Waveforms

P-Channel MOSFET

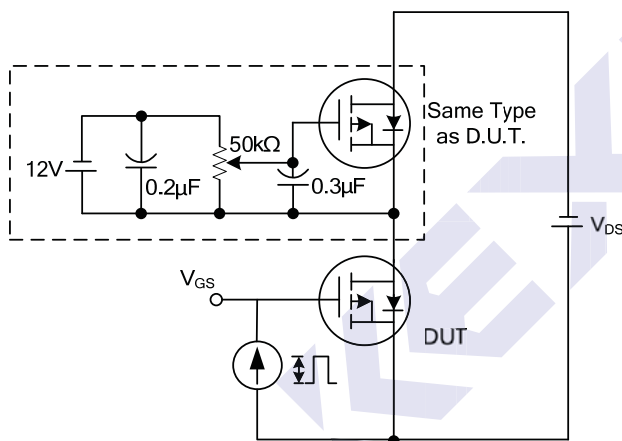
NDT40P06



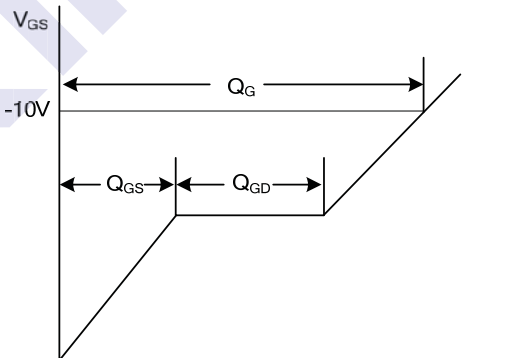
Switching Test Circuit



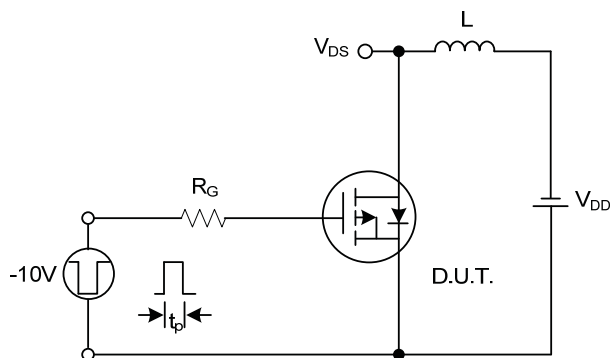
Switching Waveforms



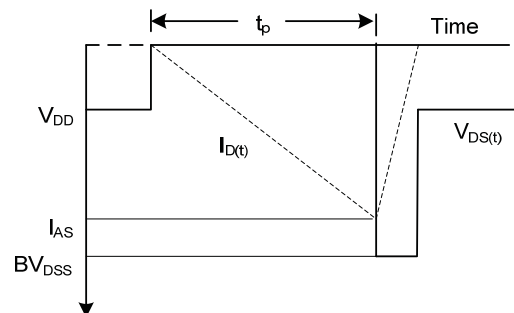
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

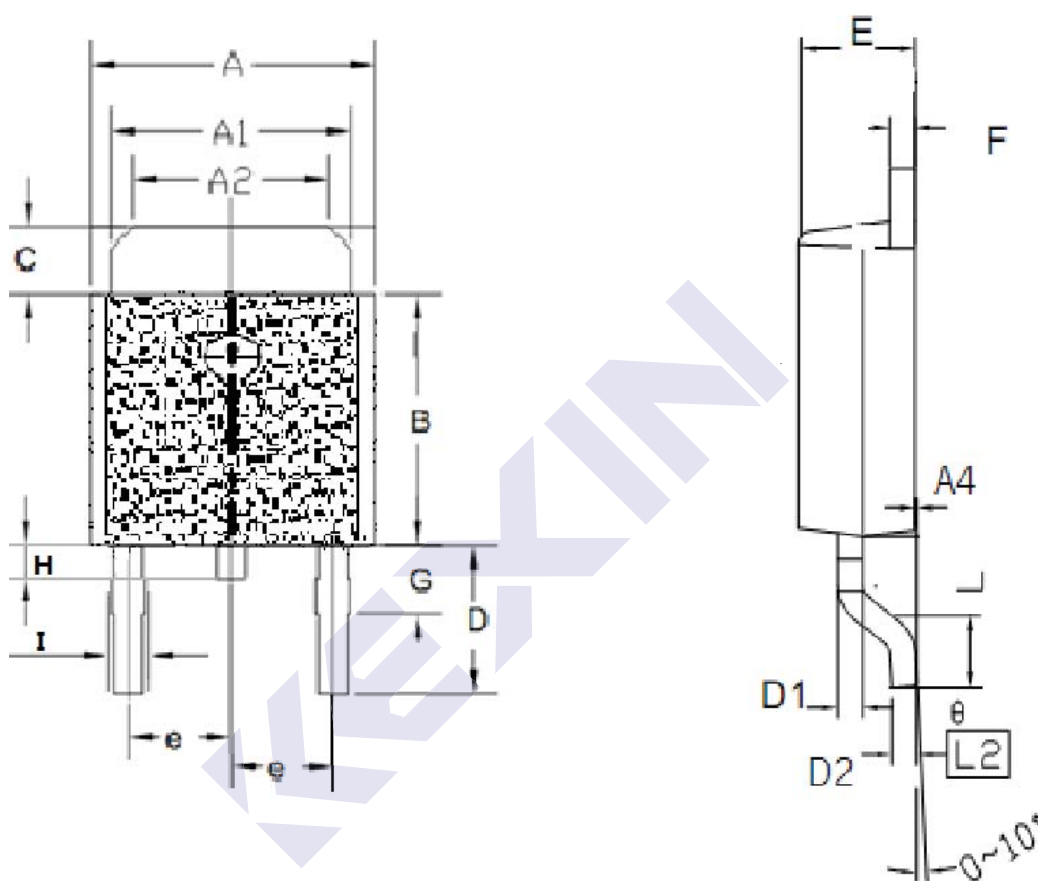
P-Channel MOSFET

NDT40P06

■ Package Dimension

TO-252

Units: mm



Symbol	Min	Max	Symbol	Min	Max
A	6.40	6.60	D	2.90	3.10
A1	5.20	5.40	D1	0.45	0.55
A2	4.40	4.60	D2	0.45	0.55
A3	4.40	4.60	e	2.30	
A4	0.00	0.15	E	2.20	2.40
A5	4.65	4.95	F	0.49	0.59
B	6.00	6.20	G	1.70	
B1	1.57	1.77	L	1.40	1.60
C	0.90	0.96	$\theta(^{\circ})$	0.00	10.00
I	0.60	0.90	H	0.49	0.52