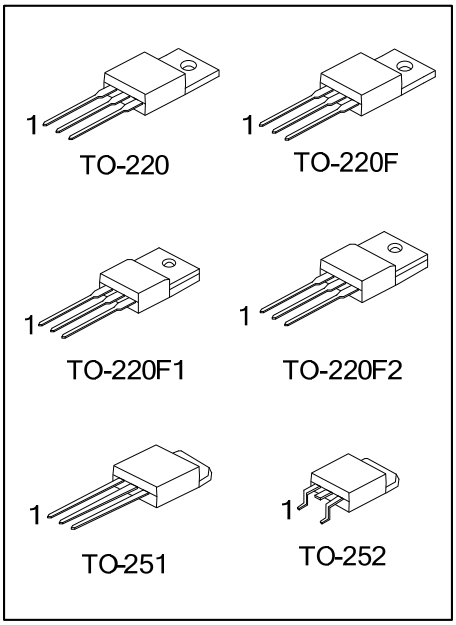
17P10 **Power MOSFET**

-17A, -100V P-CHANNEL POWER MOSFET



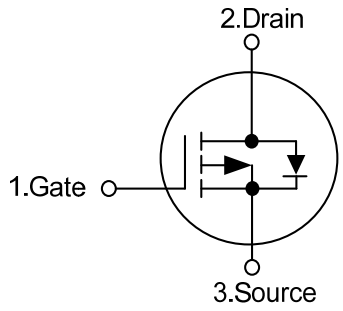
■ DESCRIPTION

The **17P10** uses advanced proprietary, planar stripe, DMOS technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable to be used in low voltage applications such as audio amplifier, high efficiency switching DC/DC converters, and DC motor control.

■ FEATURES

* $R_{DS(ON)}$ < 0.18Ω @ V_{GS}=-10V, I_D=-8.25A
* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



■ ORDERING INFORMATION

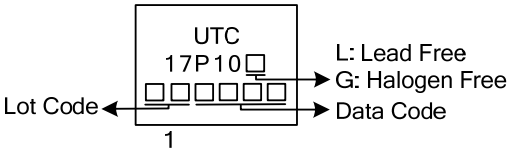
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
17P10L-TA3-T	17P10G-TA3-T	TO-220	G	D	S	Tube
17P10L-TF1-T	17P10G-TF1-T	TO-220F1	G	D	S	Tube
17P10L-TF2-T	17P10G-TF2-T	TO-220F2	G	D	S	Tube
17P10L-TF3-T	17P10G-TF3-T	TO-220F	G	D	S	Tube
17P10L-TM3-T	17P10G-TM3-T	TO-251	G	D	S	Tube
17P10L-TN3-R	17P10G-TN3-R	TO-252	G	D	S	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source

17P10L-TA3-T
(1)Packing Type
(2)Package Type
(3)Green Package

(1) T: Tube, R: Tape Reel
(2) TA3: TO-220, TF3: TO-220F, TF1: TO-220F1, TF2: TO-220F2, TM3: TO-251, TN3: TO-252
(3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	-100	V
Gate-Source Voltage		V_{GSS}	±30	V
Continuous Drain Current		I_D	-17	A
Pulsed Drain Current (Note 2)		I_{DM}	-52	A
Avalanche Current (Note 2)		I_{AR}	-17	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	160	mJ
Repetitive Avalanche Energy (Note 2)		E_{AR}	17	mJ
Peak Diode Recovery dv/dt		dv/dt	2.0	V/ns
Power Dissipation	TO-220	P_D	100	W
	TO-220F/TO-220F1 TO-220F2		41	W
	TO-251/TO-252		70	W
Derate above 25°C	TO-220		0.67	W/°C
	TO-220F/TO-220F1 TO-220F2		0.27	W/°C
	TO-251/TO-252		0.56	W/°C
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

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. Pulse width limited by $T_{J(MAX)}$
3. L=3.2mH, I_{AS}=-10A, V_{DD}=-50V, R_G=25Ω, Starting T_J=25°C
4. I_{SD}≤-17A, di/dt ≤ 200μA/ s, V_{DD}≤BV_{DSS}, Starting T_J=25°C

■ THERMAL DATA

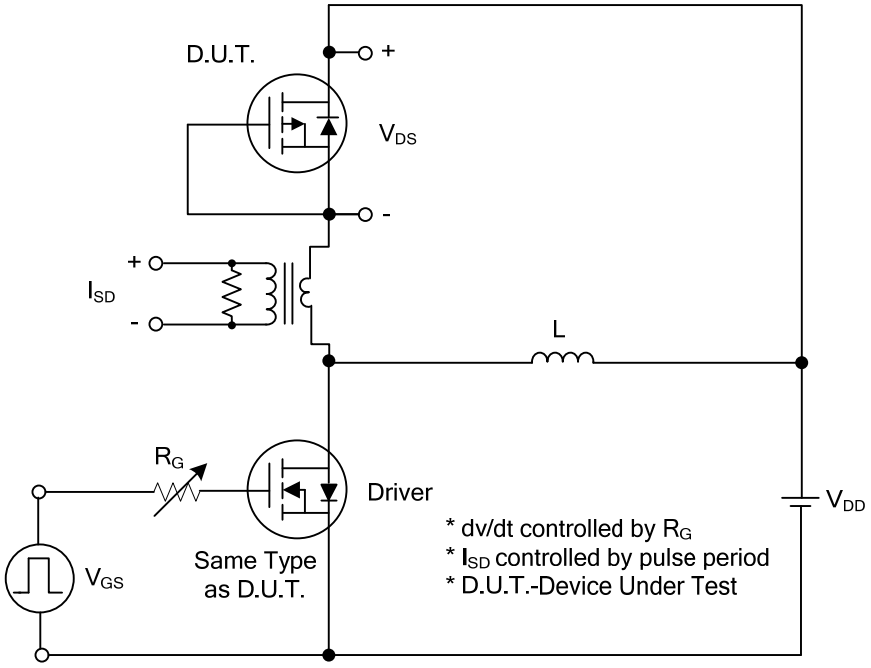
PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220/TO-220F TO-220F1/TO-220F2	θ_{JA}	62.5	°C/W
	TO-251/TO-252		110	
Junction to Case	TO-220	θ_{JC}	0.5	°C/W
	TO-220F/TO-220F1 TO-220F2		3.66	
	TO-251/TO-252		1.78	

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

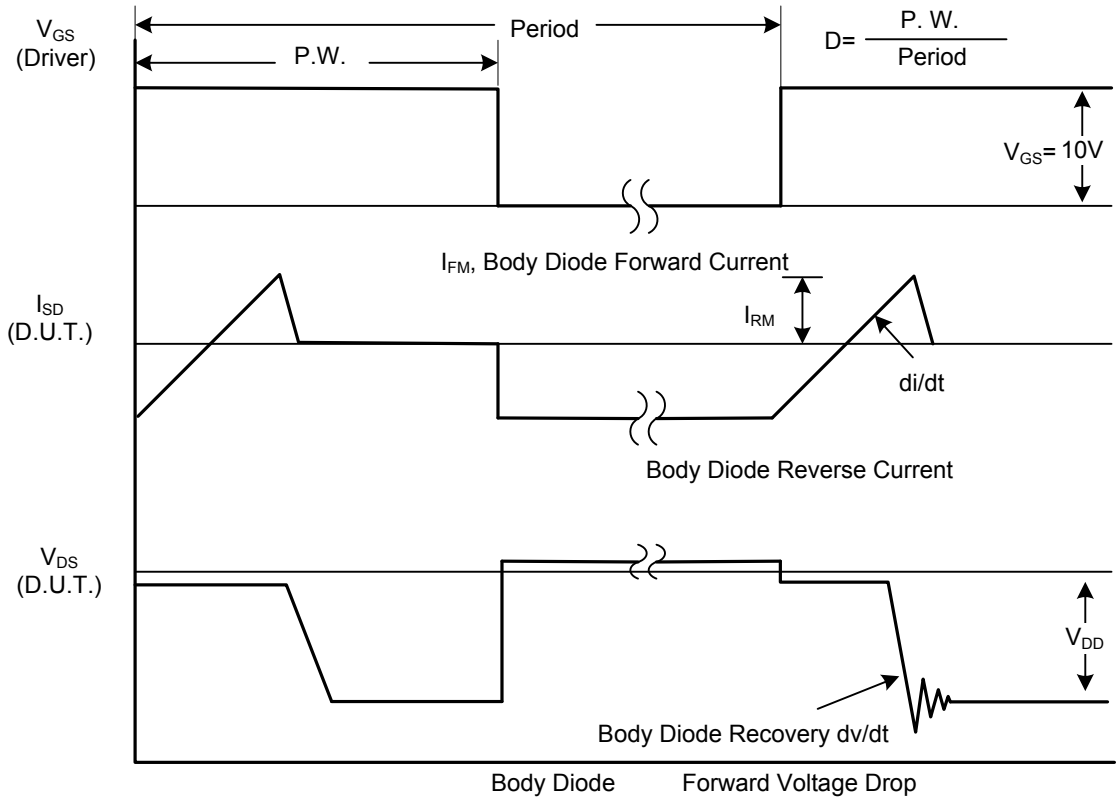
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0 V, I_D=-250μA	-100			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-100V, V_{GS}=0V			-1	μA
		V_{DS}=-100V, T_C=125°C			-10	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-2.0		-4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-8.25A			0.18	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=-25V, V_{GS}=0V, f=1.0MHz		1510		pF
Output Capacitance	C_{OSS}			190		pF
Reverse Transfer Capacitance	C_{RSS}			60		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=-50V, V_{GS}=-10V, I_D=-1.3A I_G=-100μA (Note 1, 2)		140		nC
Gate Source Charge	Q_{GS}			12		nC
Gate Drain Charge	Q_{GD}			9.5		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=-30V, V_{GS}=-10V, I_D=-0.5A, R_G=25Ω (Note 1, 2)		52		ns
Turn-ON Rise Time	t_R			86		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			420		ns
Turn-OFF Fall-Time	t_F			100		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				-17	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				-52	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-17A			-6	V
Body Diode Reverse Recovery Time	t_{RR}	V_{GS}= 0V, I_S=17A, dI_F/dt=100A/μs (Note 1)		140		ns
Body Diode Reverse Recovery Charge	Q_{RR}			0.72		μC

Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

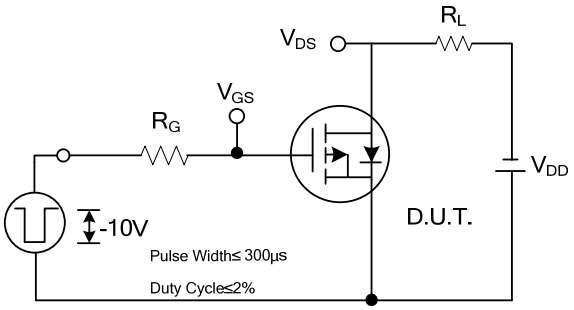


Peak Diode Recovery dv/dt Test Circuit

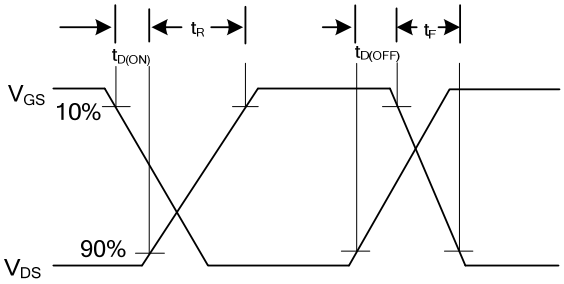


Peak Diode Recovery dv/dt Waveforms

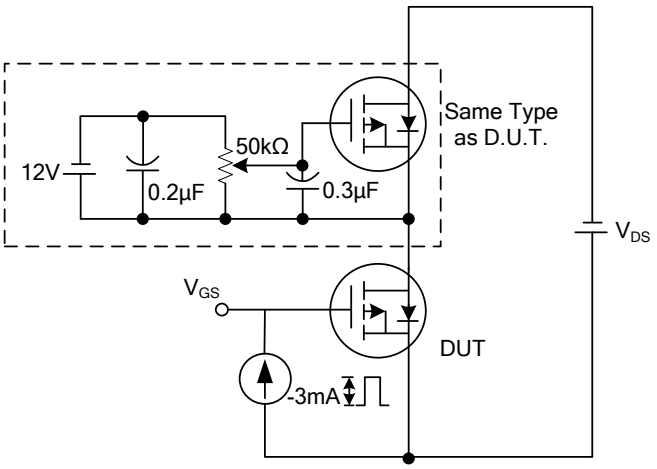
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



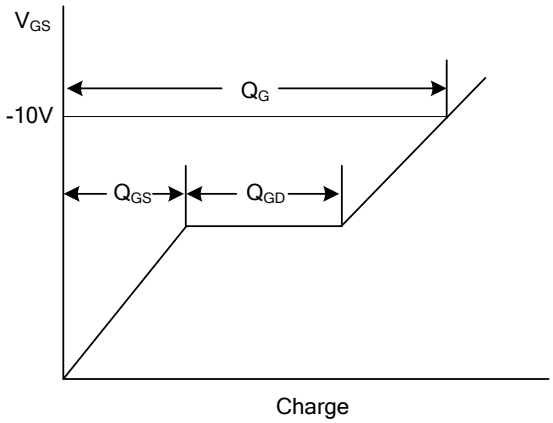
Switching Test Circuit



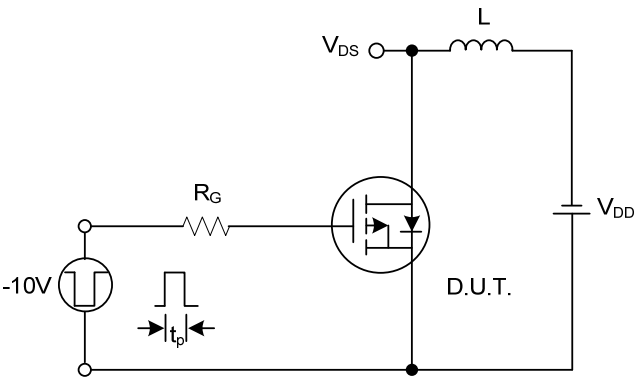
Switching Waveforms



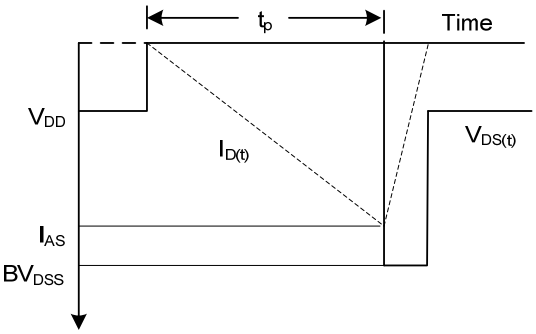
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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