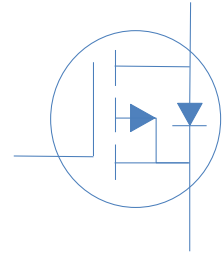


**30V P-Ch Power MOSFET**

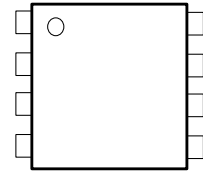
$V_{DS}$		-30	V
$R_{DS(on),typ}$	$V_{GS}=10V$	3	$m\Omega$
$R_{DS(on),typ}$	$V_{GS}=4.5V$	4.6	$m\Omega$
$I_D$ (Silicon Limited)		-80	A

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Part Number	Package	Marking
HTN036P03	DFN5*6	TN036P03


**Absolute Maximum Ratings at  $T_J=25$  (unless otherwise specified)**

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	$I_D$	$T_C=25$	-80	A
		$T_C=100$	-55	
Drain to Source Voltage	$V_{DS}$	-	-30	V
Gate to Source Voltage	$V_{GS}$	-	$\pm 20$	V
Pulsed Drain Current	$I_{DM}$	-	-240	A
Avalanche Energy, Single Pulse	$E_{AS}$	$L=0.1mH, T_C=25$	180	mJ
Power Dissipation	$P_D$	$T_C=25$	69	W
Operating and Storage Temperature	$T_J, T_{stg}$	-	-55 to 150	

**Absolute Maximum Ratings**

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	62.5	$^{\circ}W$
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.8	$^{\circ}W$

Electrical Characteristics at  $T_J=25$  (unless otherwise specified)

## Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.0	-1.5	-3.0	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=-24V, T_J=25$	-	-	-1	$\mu A$
		$V_{GS}=0V, V_{DS}=-20V, T_J=125$	-	-	-10	
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-30A$	-	3.2	3.6	$m\Omega$
		$V_{GS}=-4.5V, I_D=-30A$	-	4.6	5.6	
Transconductance	$g_{fs}$	$V_{DS}=-5V, I_D=-30A$	-	70	-	S
Gate Resistance	$R_G$	$V_{GS}=15mV, V_{DS}=0V, f=1MHz$	-	3.4	-	$\Omega$

## Dynamic Characteristics

Input Capacitance	$C_{iss}$		-	6400	-	pF
Output Capacitance	$C_{oss}$	$V_{GS}=0V, V_{DS}=-15V, f=1MHz$	-	913	-	
Reverse Transfer Capacitance	$C_{rss}$		-	656	-	
Total Gate Charge	$Q_g(10V)$		-	96.5	-	nC
Gate to Source Charge	$Q_{gs}$	$V_{DD}=-15V, I_D=-30A, V_{GS}=-10V$	-	24.8	-	
Gate to Drain (Miller) Charge	$Q_{gd}$		-	13.8	-	
Turn on Delay Time	$t_{d(on)}$		-	15	-	ns
Rise time	$t_r$	$V_{DD}=-15V, I_D=-1A, V_{GS}=-10V,$	-	20	-	
Turn off Delay Time	$t_{d(off)}$	$R_G=2.7\Omega,$	-	130	-	
Fall Time	$t_f$		-	55	-	

## Reverse Diode Characteristics

Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_F=-30A$	-		-1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=-80A, di_F/dt=100A/\mu s$	-	26	-	ns
Reverse Recovery Charge	$Q_{rr}$		-	80	-	nC



Fig 1. Typical Output Characteristics	Figure 2. On-Resistance vs. Gate-Source Voltage
Figure 3. On-Resistance vs. Drain Current and Gate Voltage	Figure 4. Normalized On-Resistance vs. Junction Temperature
Figure 5. Typical Transfer Characteristics	Figure 6. Typical Source-Drain Diode Forward Voltage

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

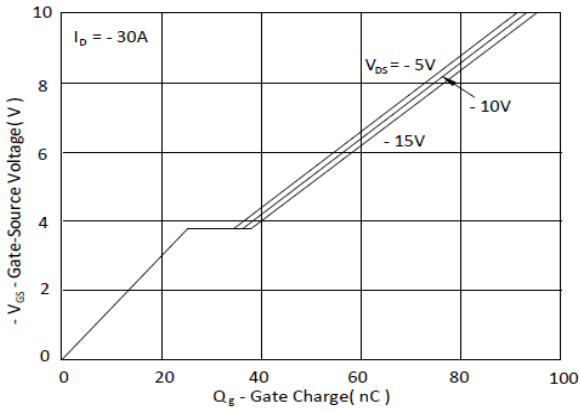


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

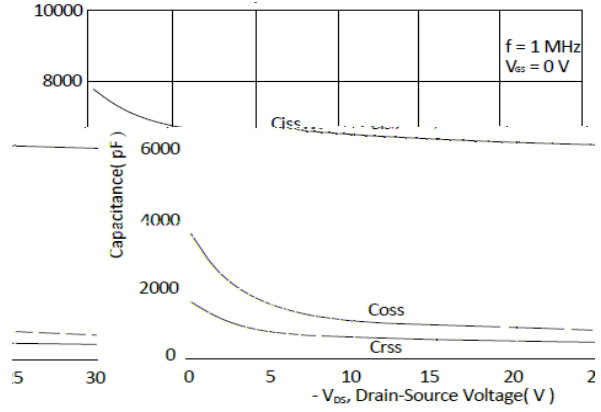


Figure 9. Maximum Safe Operating Area

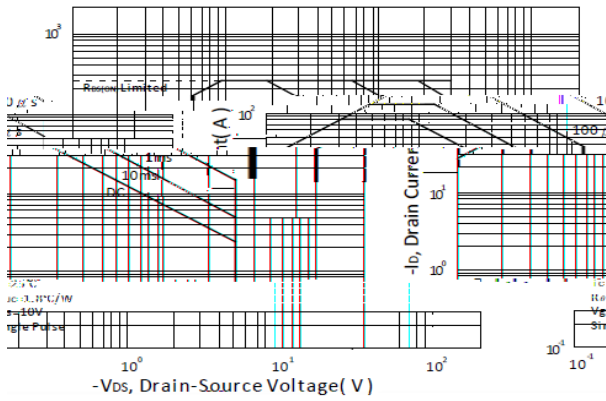
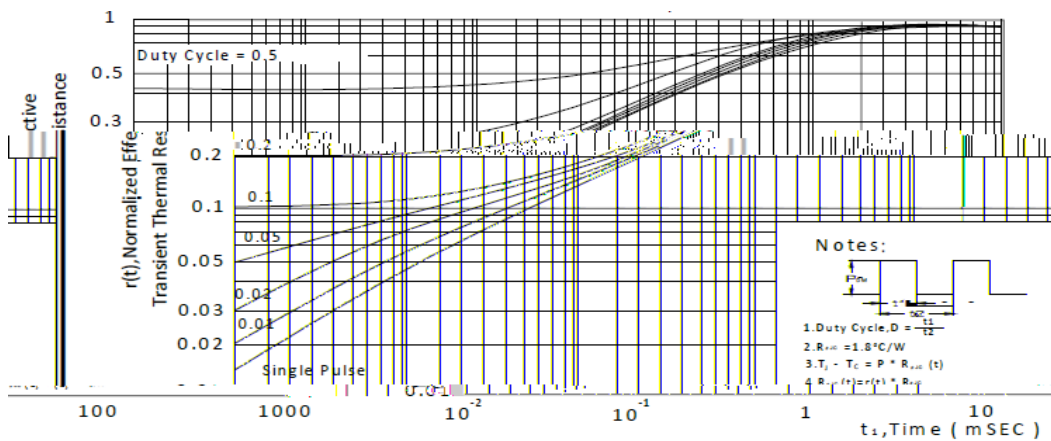
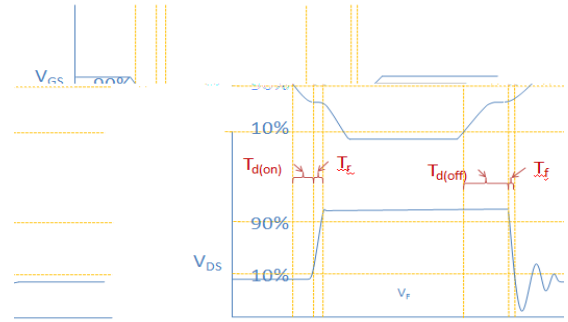
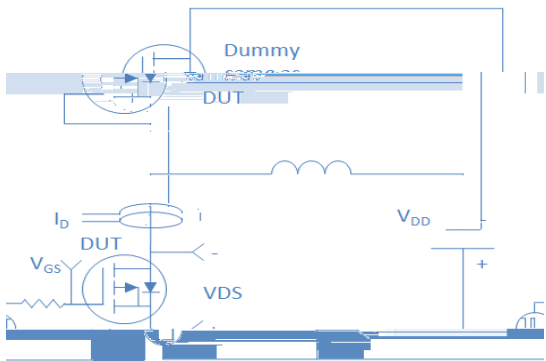


Figure 10. Single Pulse Maximum Power Dissipation

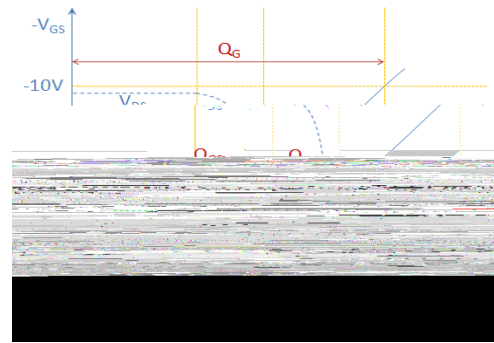
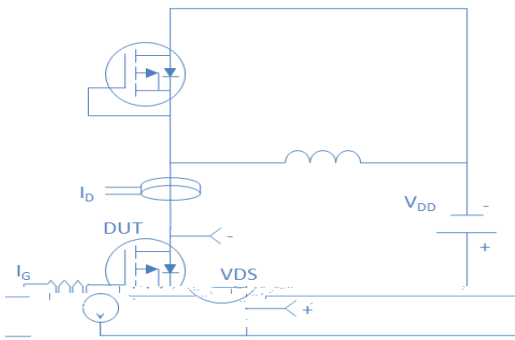
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



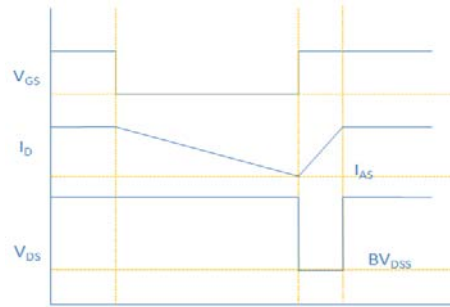
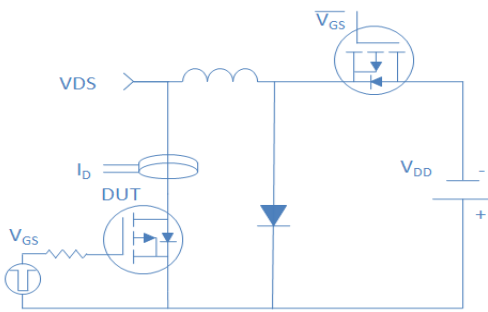
Inductive switching Test



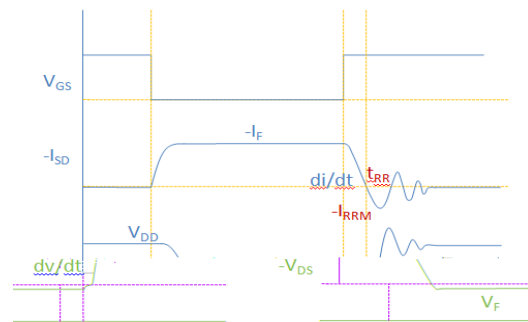
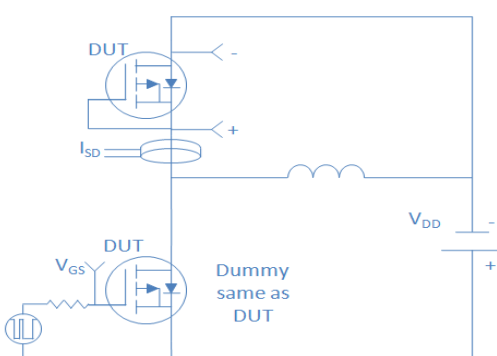
Gate Charge Test



Uclamped Inductive Switching (UIS) Test



Diode Recovery Test





Package Outline

DFN5x6\_P, 8 Leads