30V P-Ch Power MOSFET

Feature
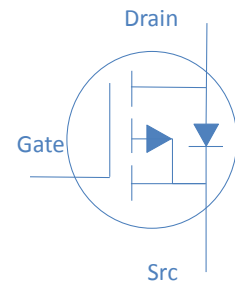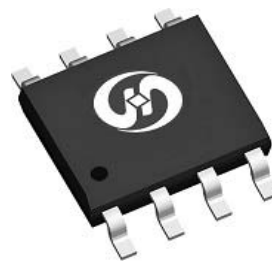
◇ High Speed Power Switching, Logic Level
◇ Enhanced Avalanche Ruggedness
◇ 100% UIS Tested, 100% Rg Tested
◇ Lead Free, Halogen Free

V_{DS}		-30	V
$R_{DS(on),typ}$	V_{GS}=10V	17.5	mΩ
$R_{DS(on),typ}$	V_{GS}=4.5V	26	mΩ
$I_{D\ (Sillicon\ Limited)}$		-10	A

Application

◇ Hard Switching and High Speed Circuit
◇ DC/DC in Telecoms and Indutrial

SOIC-8

Part Number	Package	Marking
HTS200P03	SOIC-8	TS200P03

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℃	-10	A
		T_C=100℃	-8	
Drain to Source Voltage	V_{DS}	-	-30	V
Gate to Source Voltage	V_{GS}	-	±25	V
Pulsed Drain Current	I_{DM}	-	-40	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C=25℃	5.00	mJ
Power Dissipation	P_D	T_A=25℃	2.5	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to150	℃

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	50	℃/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	25	℃/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=-250μA	-30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=-250μA	-1.0	-1.5	-3.0	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=-24V, T_j=25℃	-	-	-1	μA
		V_{GS}=0V, V_{DS}=-20V, T_j=125℃	-	-	-10	
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
		V_{GS}=±25V, V_{DS}=0V	-	-	±500	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-10A	-	17.5	20	mΩ
		V_{GS}=-4.5V, I_D=-7A	-	26	35	
Transconductance	g_{fs}	V_{DS}=-5V, I_D=-10A	-	24	-	S
Gate Resistance	R_G	V_{GS}=15mV, V_{DS} =0V, f=1MHz	-	4.5	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz	-	1407	-	pF
Output Capacitance	C_{oss}		-	208	-	
Reverse Transfer Capacitance	C_{rss}		-	164	-	
Total Gate Charge	Q_g (10V)	V_{DD}=-15V, I_D=-13A, V_{GS}=-10V	-	20.3	-	nC
	Q_g (4.5V)			9.8		
Gate to Source Charge	Q_{gs}		-	3.2	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	4.9	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=-15V, I_D=-1A, V_{GS}=-10V, R_G=2.7Ω,	-	10	-	ns
Rise time	t_r		-	8	-	
Turn off Delay Time	$t_{d(off)}$		-	25	-	
Fall Time	t_f		-	6	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=-3A	-		-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-3A, dI_F/dt=100A/μs	-	32	-	ns
Reverse Recovery Charge	Q_{rr}		-	26	-	nC

Hunteck

Fig 1. Typical Output Characteristics	Figure 2. On-Resistance vs. Gate-Source Voltage

Fig 1. Typical Output Characteristics

$V_{GS} = -10V$
$-7.0V$
$-5.0V$
$-4.5V$
$-I_D$- Drain Current (A)
$-V_{DS}$ - Drain-Source Voltage(V)

Figure 2. On-Resistance vs. Gate-Source Voltage

$I_D = -5 A$
$R_{DS(ON)}$ - On-Resistance(Ω)
$T_A = 125°C$
$T_A = 25°C$
$-V_{GS}$- Gate-Source Voltage(V)
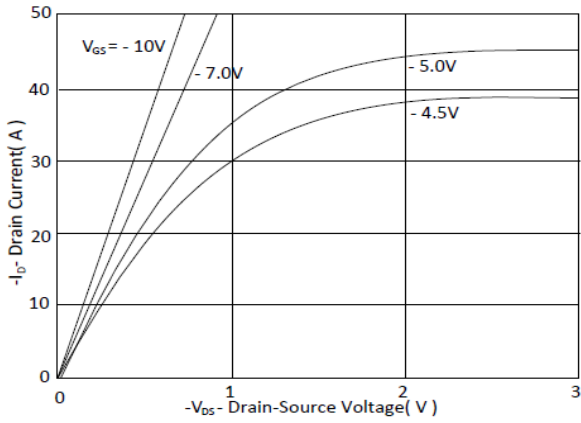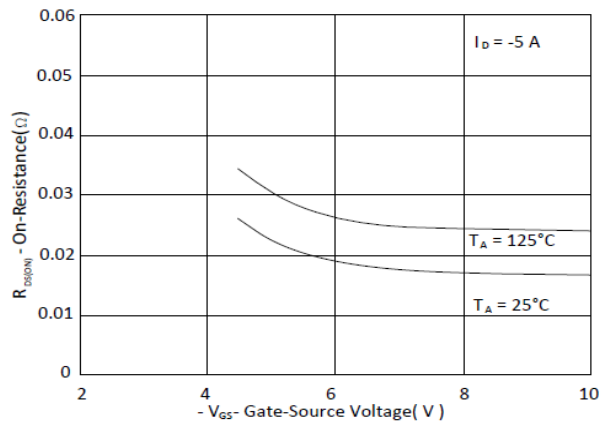
Figure 3. On-Resistance vs. Drain Current and Gate Voltage

$R_{DS(ON)}$ - Normalized Drain-Source On-Resistance
$V_{GS} = -4.5 V$
$-5 V$
$-6 V$
$-7 V$
$-10 V$
$-I_D$- Drain Current(A)
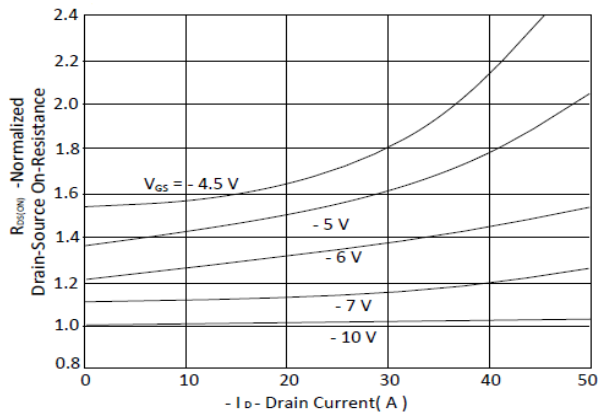
Figure 4. Normalized On-Resistance vs. Junction Temperature

$I_D = -10 A$
$V_{GS} = -10V$
$R_{DS(ON)}$ - Normalized Drain-Source On-Resistance
T_J - Junction Temperature (°C)
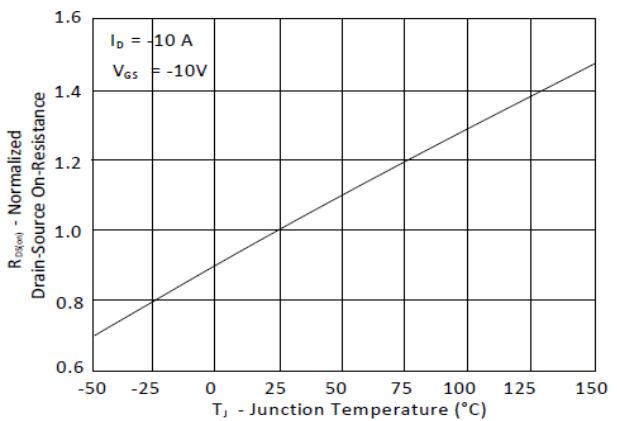
Figure 5. Typical Transfer Characteristics

$V_{DS} = -5V$
$-55°C$
$25°C$
$T_A = 125°C$
$-I_D$- Drain Current(A)
$-V_{GS}$ - Gate-to-Source Voltage(V)
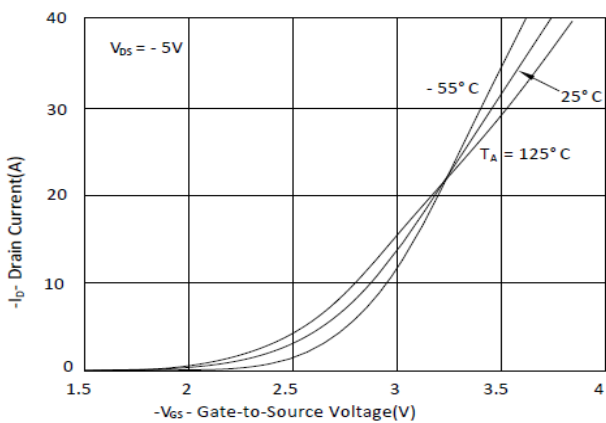
Figure 6. Typical Source-Drain Diode Forward Voltage

$V_{GS} = 0V$
$T_A = 125°C$
$25°C$
$-55°C$
$-I_S$ - Reverse Drain Current(A)
$-V_{SD}$ - Body Diode Forward Voltage(V)
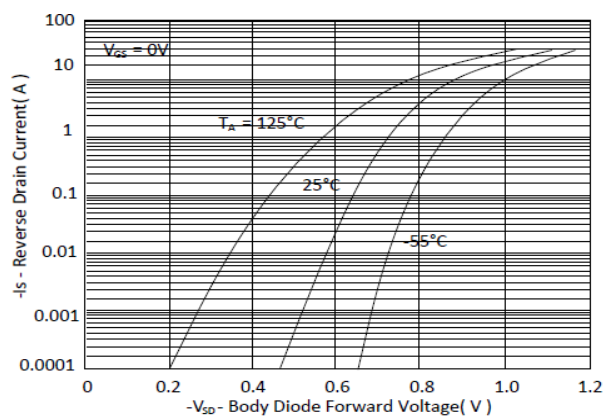
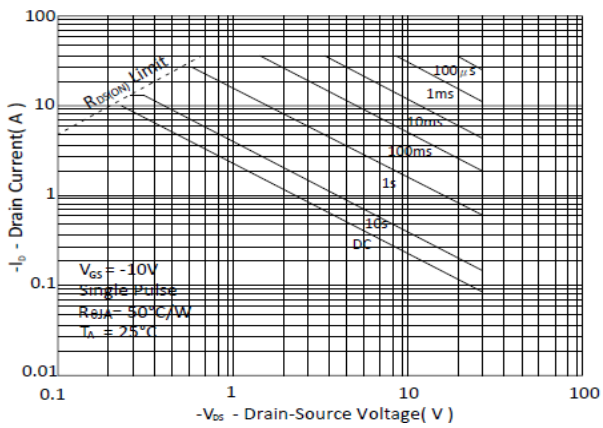| Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage	Figure 8. Typical Capacitance vs. Drain-to-Source Voltage
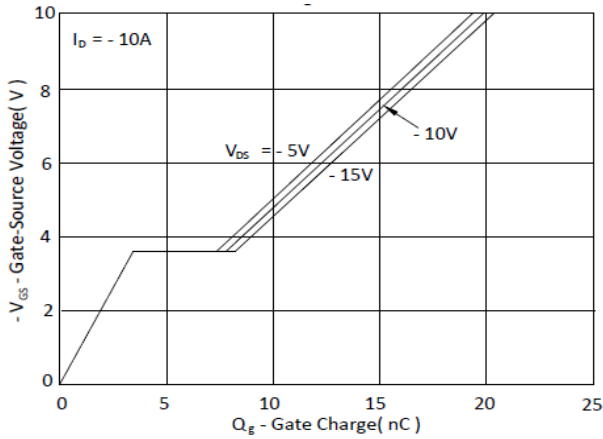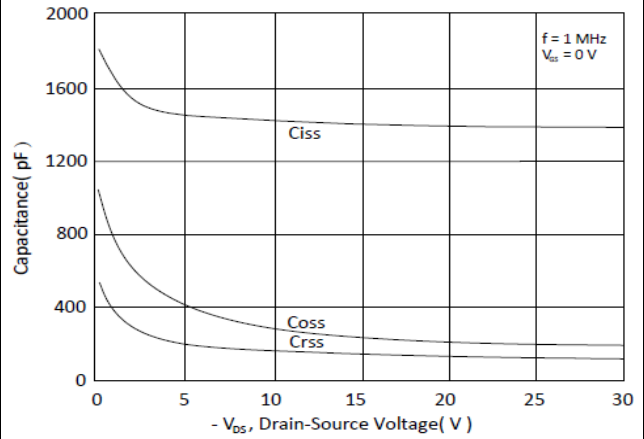
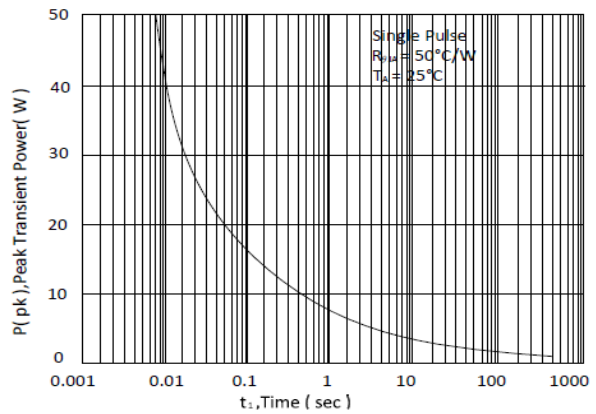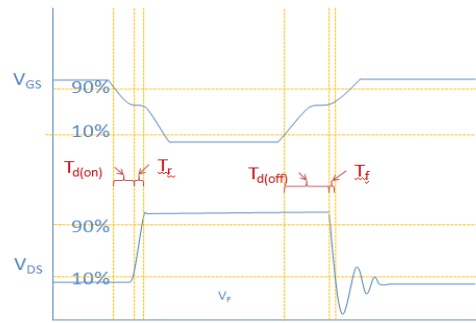Figure 9. Maximum Safe Operating Area | Figure 10. Single Pulse Maximum Power Dissipation
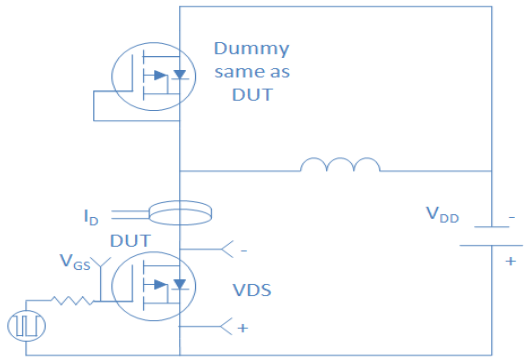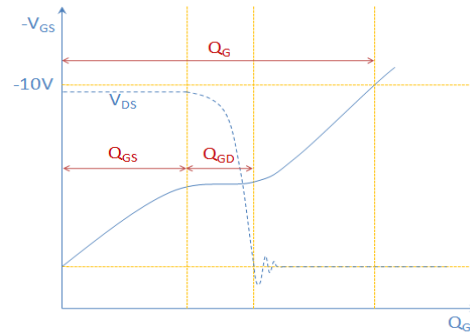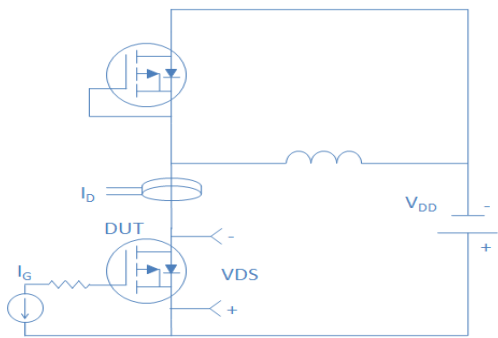
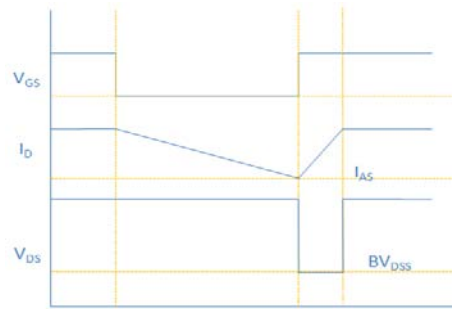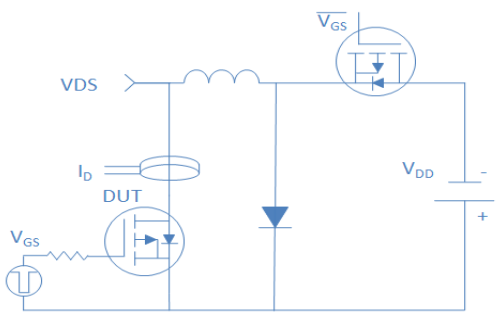Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

Ver 1.0　　　　　　　　　　　　　　　　　　　　　　　　Apr. 2018
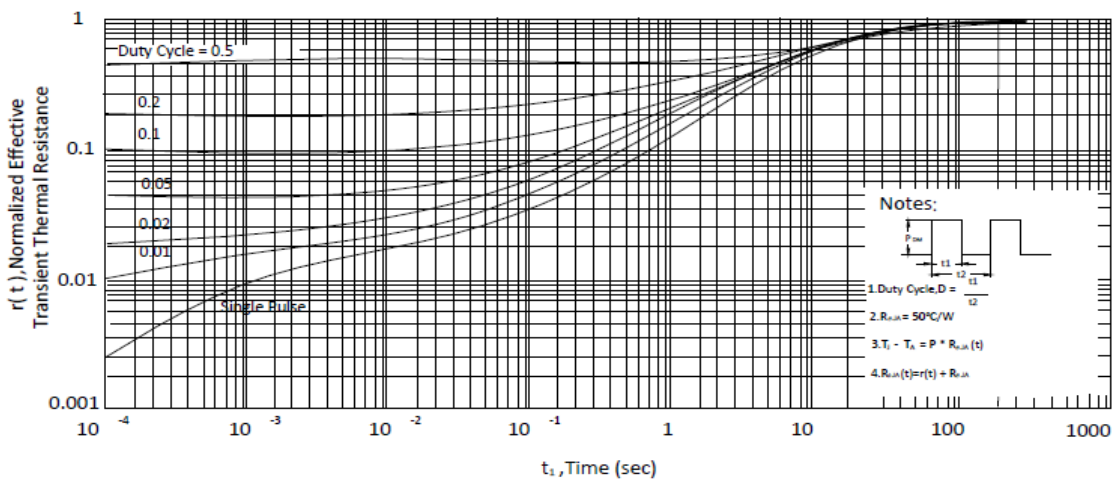
Inductive switching Test

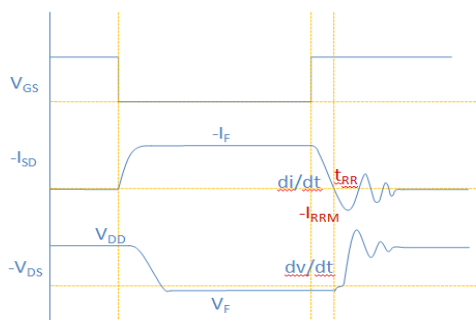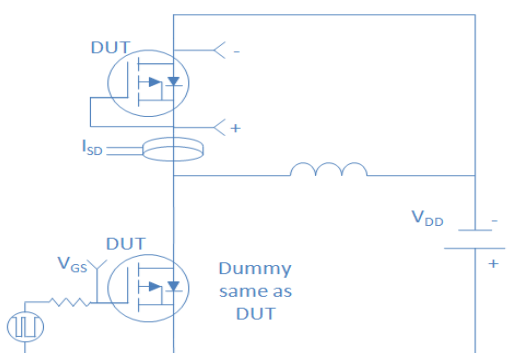## Gate Charge Test

Uclamped Inductive Switching (UIS) Test

Diode Recovery Test

Package Outline

SOIC-8, 8leads
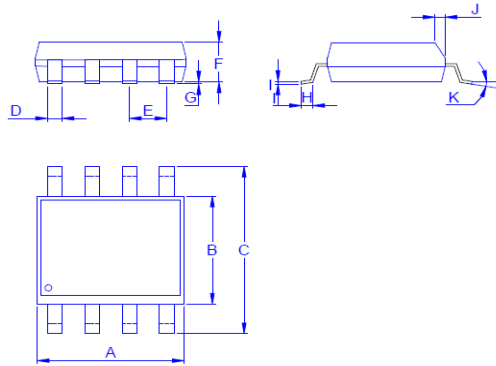
Dimension in mm

Dimension	A	B	C	D	E	F	G	H	I	J	K
in.	4.70	3.70	5.80	0.33		1.20	0.08	0.40	0.19	0.25	0°
Typ.					1.27						
Max.	5.10	4.10	6.20	0.51		1.62	0.28	0.83	0.26	0.50	8°