30V P-Ch Power MOSFET

Feature

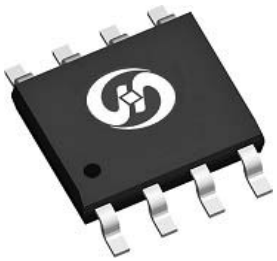
◇ High Speed Power Switching, Logic Level
◇ Enhanced Avalanche Ruggedness
◇ 100% UIS Tested, 100% Rg Tested
◇ Lead Free, Halogen Free

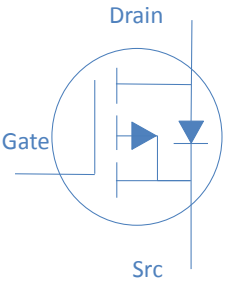
V_{DS}		-30	V
$R_{DS(on),typ}$	V_{GS}=10V	12	mΩ
$R_{DS(on),typ}$	V_{GS}=4.5V	17	mΩ
$I_{D\ (Sillicon\ Limited)}$		-12	A

Application

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

SOIC-8





Part Number	Package	Marking
HTS140P03	SOIC-8	TS140P03

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℃	-12	A
		T_C=100℃	-9	
Drain to Source Voltage	V_{DS}	-	-30	V
Gate to Source Voltage	V_{GS}	-	±25	V
Pulsed Drain Current	I_{DM}	-	-48	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C=25℃	20	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}=±25V, V_{DS}=0V	-	-	±100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-12A	-	12	14	mΩ
		V_{GS}=-4.5V, I_D=-9A	-	17	21	
Transconductance	g_{fs}	V_{DS}=-5V, I_D=-12A	-	28	-	S

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz	-	2270	-	pF
Output Capacitance	C_{oss}		-	342	-	
Reverse Transfer Capacitance	C_{rss}		-	300	-	
Total Gate Charge	Q_g (10V)	V_{DD}=-15V, I_D=-10A, V_{GS}=-10V	-	39.3	-	nC
	Q_g (4.5V)		-	16	-	
Gate to Source Charge	Q_{gs}		-	4.9	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	7.5	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=-15V, I_D=-1A, V_{GS}=-10V, R_G=2.7Ω,	-	20	-	ns
Rise time	t_r		-	12	-	
Turn off Delay Time	$t_{d(off)}$		-	55	-	
Fall Time	t_f		-	15	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=-3.6A	-		-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-3.6A, dI_F/dt=100A/μs	-	52	-	ns
Reverse Recovery Charge	Q_{rr}		-	60	-	nC

Fig 1. Typical Output Characteristics

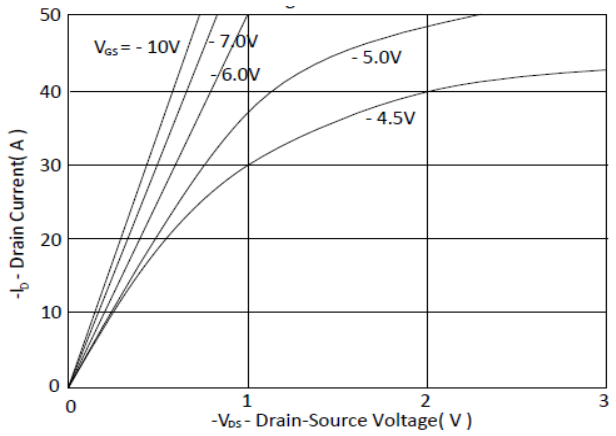


Figure 2. On-Resistance vs. Gate-Source Voltage

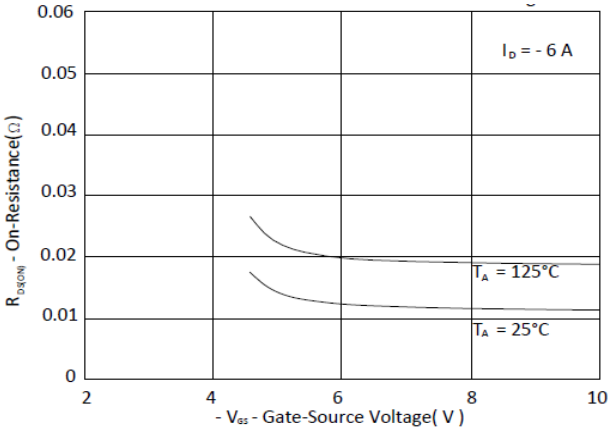


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

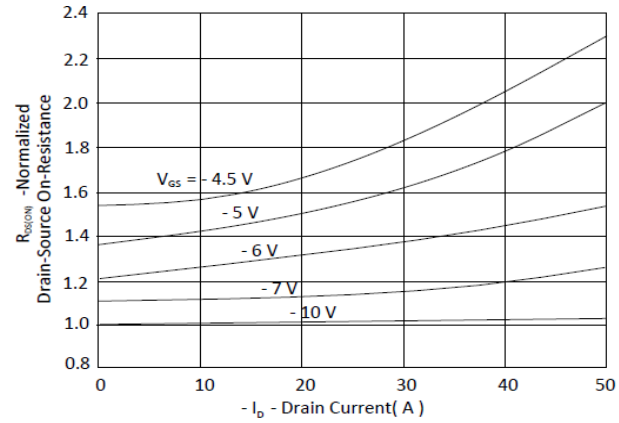


Figure 4. Normalized On-Resistance vs. Junction Temperature

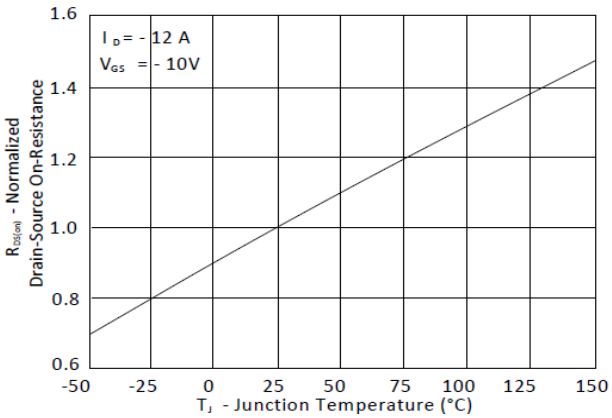


Figure 5. Typical Transfer Characteristics

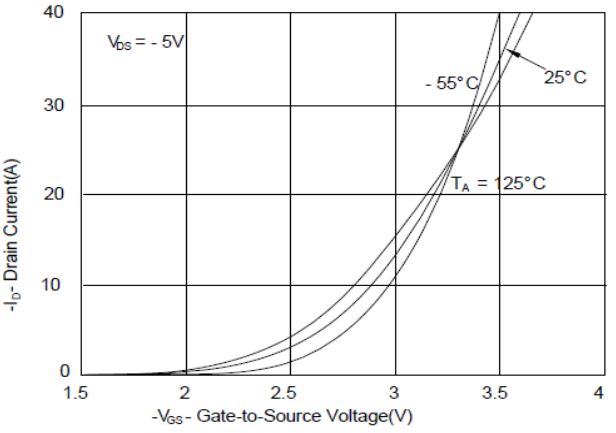


Figure 6. Typical Source-Drain Diode Forward Voltage

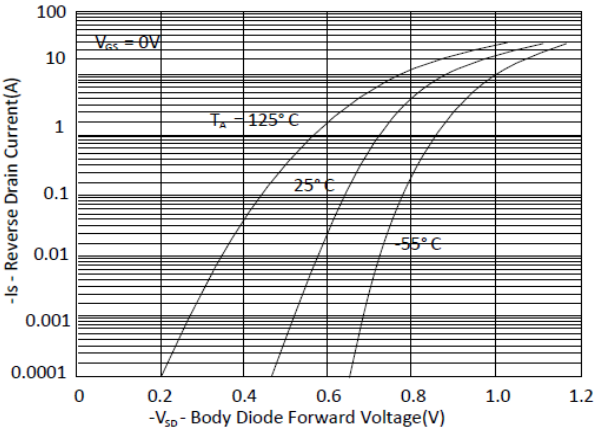


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

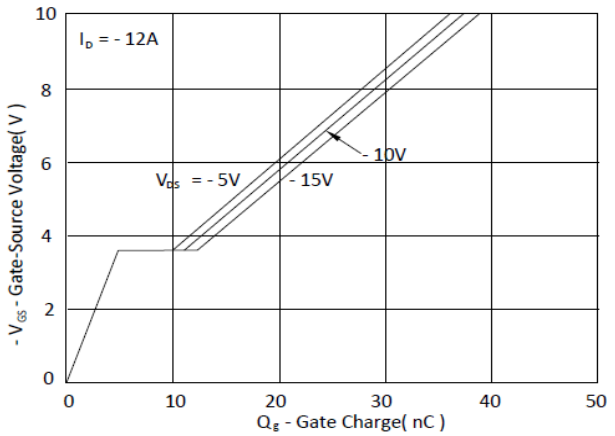


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

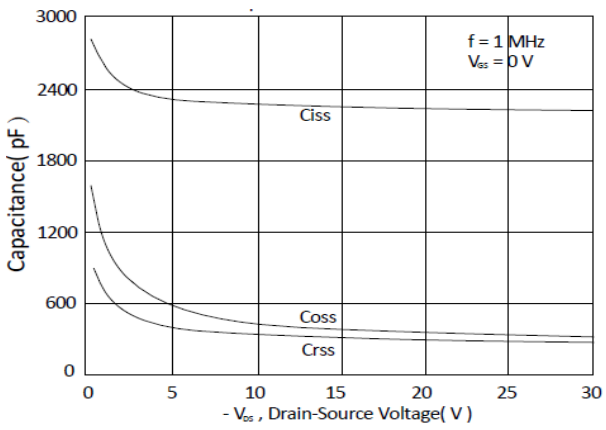


Figure 9. Maximum Safe Operating Area

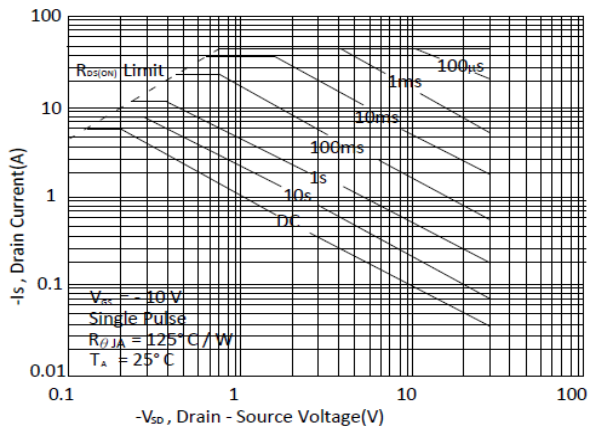


Figure 10. Single Pulse Maximum Power Dissipation

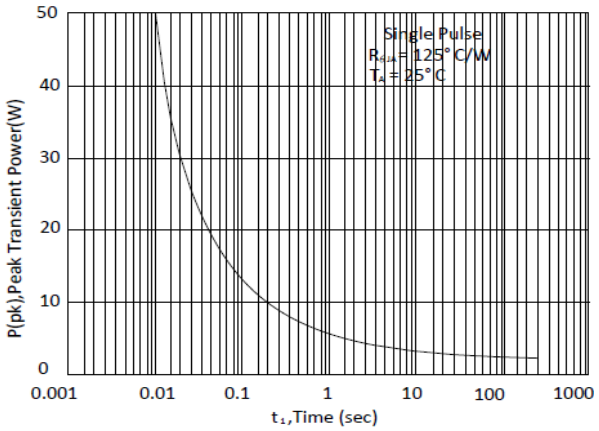
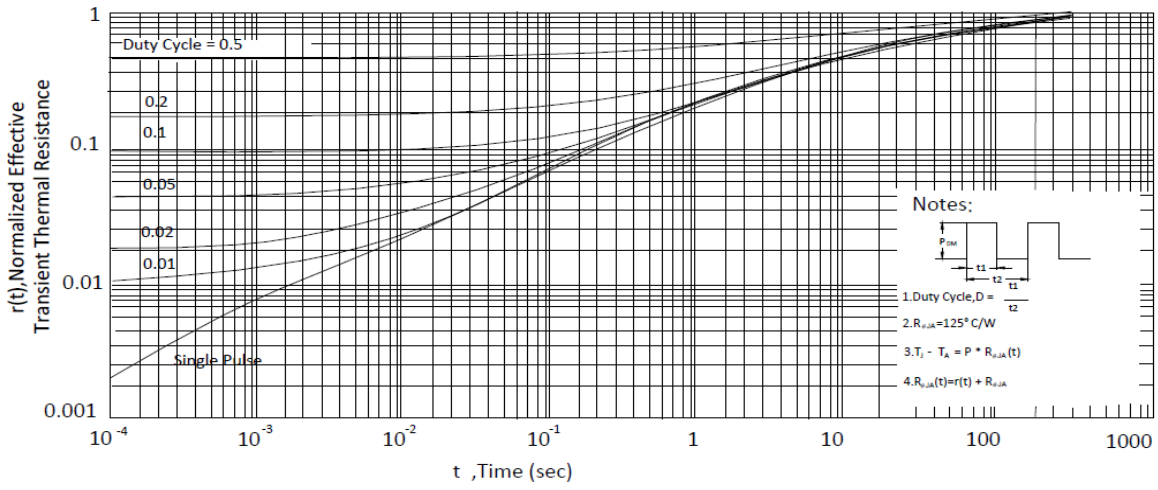
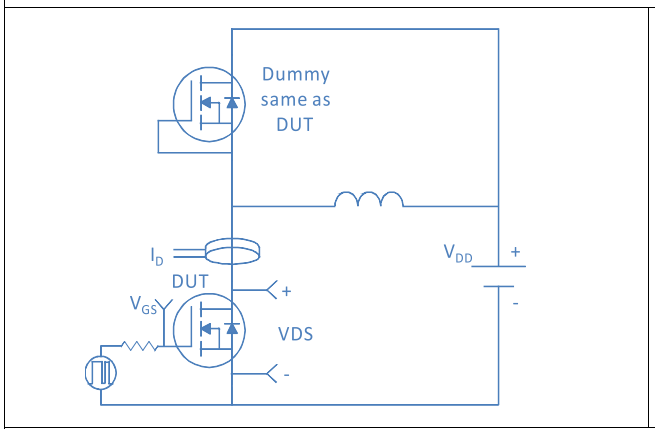
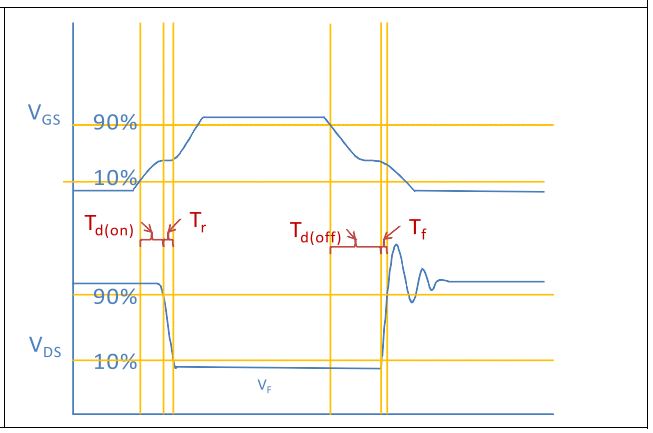


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

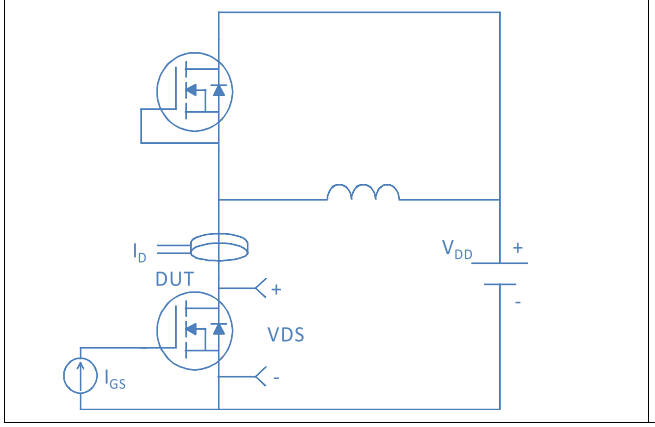


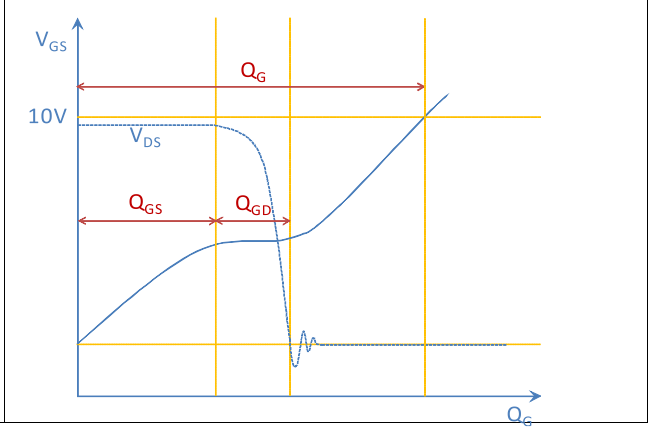
Inductive switching Test



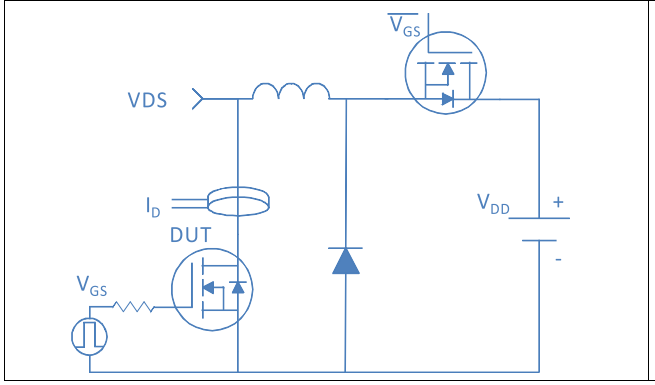


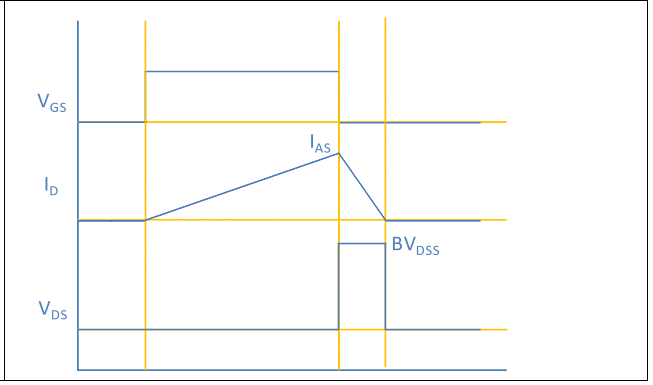
Gate Charge Test



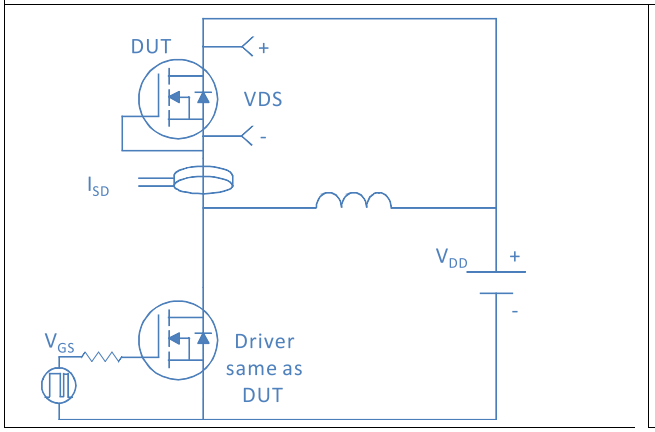


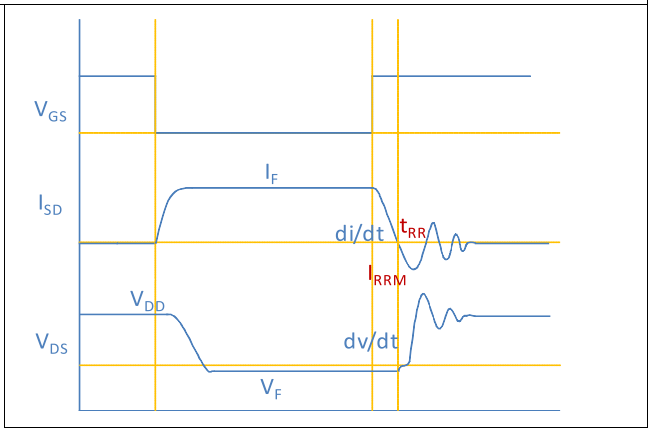
Uclamped Inductive Switching (UIS) Test





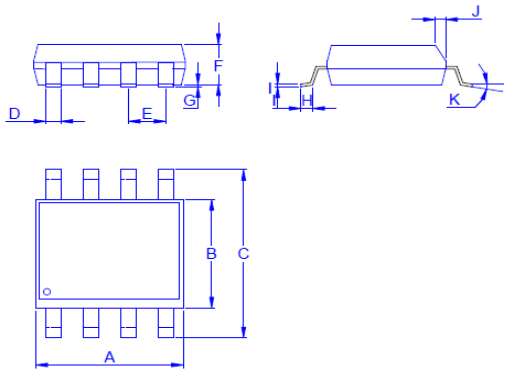
Diode Recovery Test





Package Outline

SOP-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°