

30V P-Ch Power MOSFET

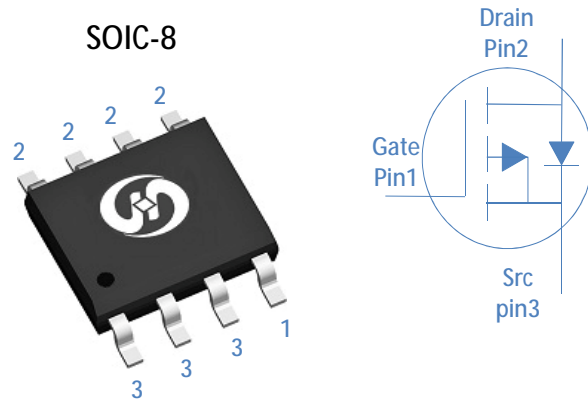
Feature

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

V_{DS}		-30	V
$R_{DS(on),typ}$	$V_{GS}=10V$	14	mΩ
$R_{DS(on),typ}$	$V_{GS}=4.5V$	21	mΩ
I_D (Silicon Limited)		-9.3	A

Application

- ◇ Hard Switching and High Speed Circuit
- ◇ DC/DC in Telecoms and Industrial



Part Number	Package	Marking
HTS180P03T	SOIC-8	TS180P03T

Absolute Maximum Ratings at $T_j=25^{\circ}C$ (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	$T_C=25^{\circ}C$	-9.3	A
Drain to Source Voltage	V_{DS}	-	-30	V
Gate to Source Voltage	V_{GS}	-	± 20	V
Pulsed Drain Current	I_{DM}	-	-37.2	A
Power Dissipation	P_D	$T_A=25^{\circ}C$	2.5	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to 150	$^{\circ}C$

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	50	$^{\circ}C/W$

Electrical Characteristics at $T_j=25^{\circ}\text{C}$ (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	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.8	-	-2.0	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=-30V, T_j=25^{\circ}\text{C}$	-	-	-1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4A$	-	14	18	m Ω
		$V_{GS}=-4.5V, I_D=-2A$	-	21	26	

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-15V, f=1\text{MHz}$	-	1710	-	pF
Output Capacitance	C_{oss}		-	260	-	
Reverse Transfer Capacitance	C_{rss}		-	185	-	
Total Gate Charge	Q_g	$V_{DD}=-24V, I_D=-1A, V_{GS}=-4.5V$	-	18	-	nC
Gate to Source Charge	Q_{gs}		-	3.4	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	7.1	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=-24V, I_D=-1A, V_{GS}=-10V, R_G=6\Omega,$	-	16	-	ns
Rise time	t_r		-	8	-	
Turn off Delay Time	$t_{d(off)}$		-	75	-	
Fall Time	t_f		-	36	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_f=-2A$	-		-1.2	V
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Fig 1. Typical Output Characteristics

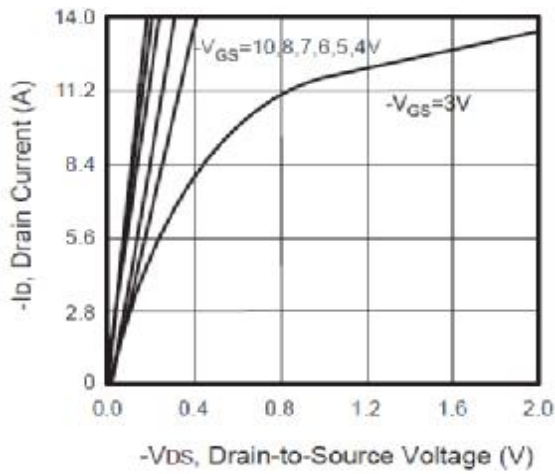


Figure 2. Gate Threshold Voltage vs. Junction Temperature

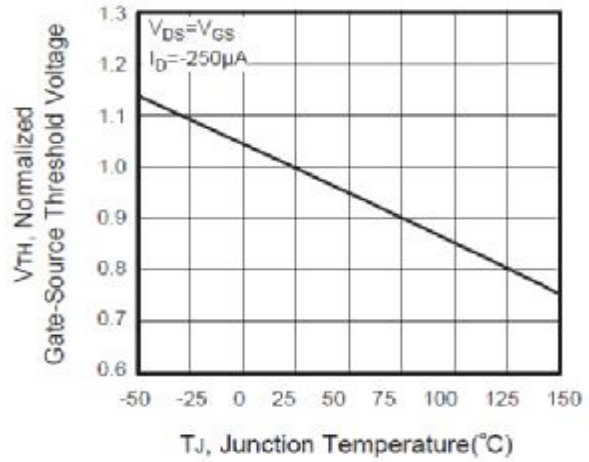


Figure 3. Breakdown Voltage vs. Junction Temperature

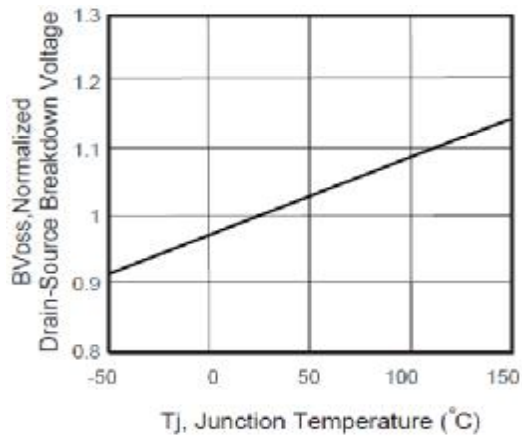


Figure 4. Normalized On-Resistance vs. Junction Temperature

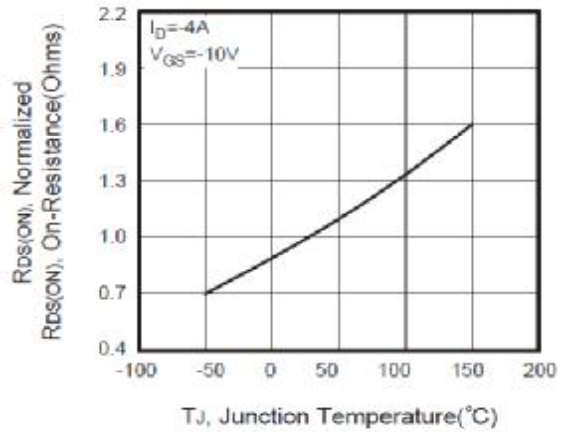


Figure 5. Typical Transfer Characteristics

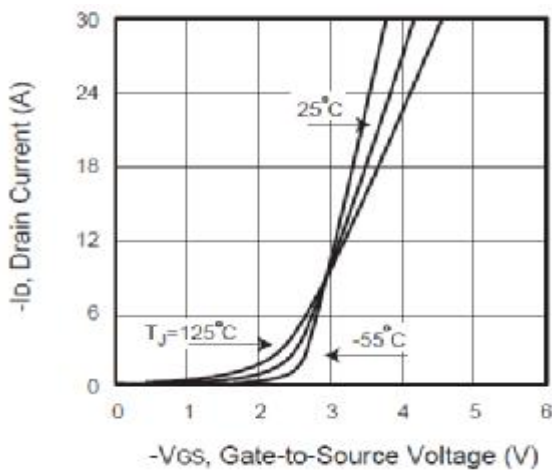


Figure 6. Typical Source-Drain Diode Forward Voltage

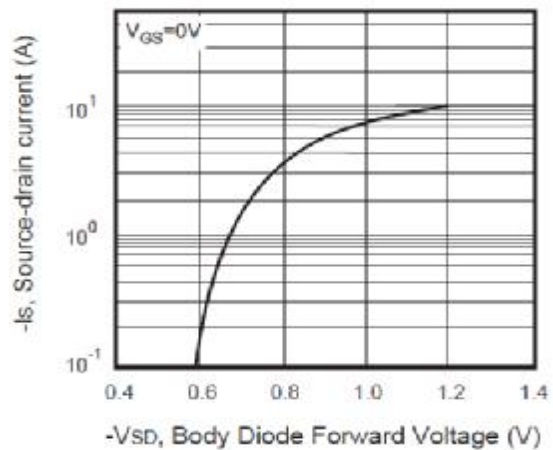


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

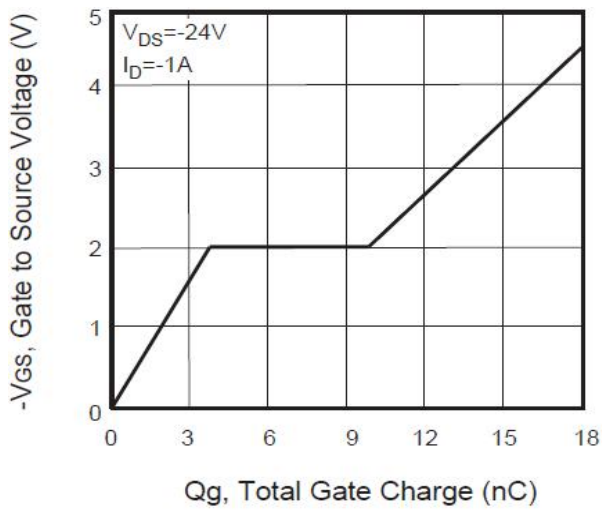


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

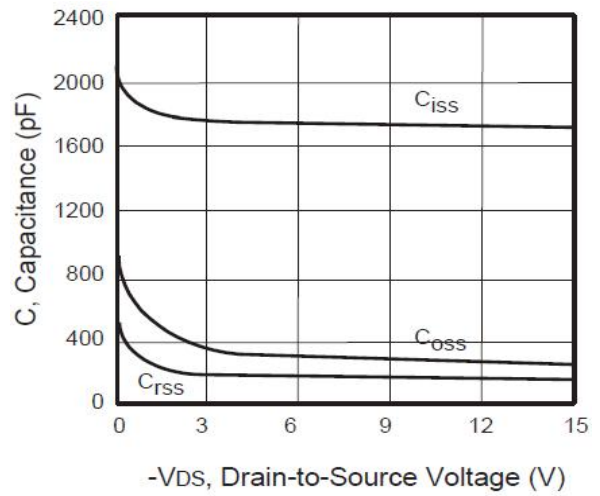


Figure 9. Maximum Safe Operating Area

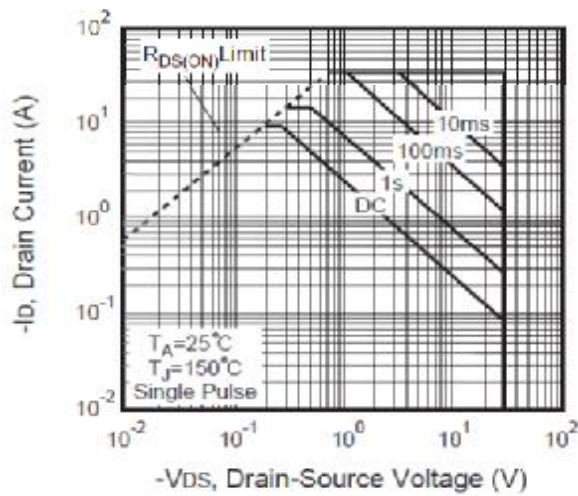
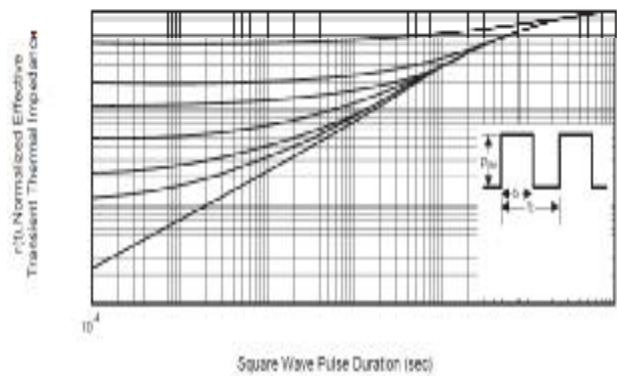
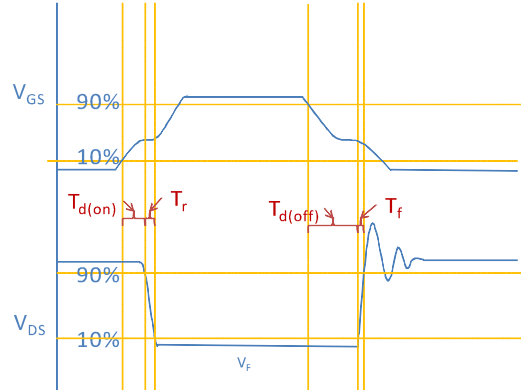
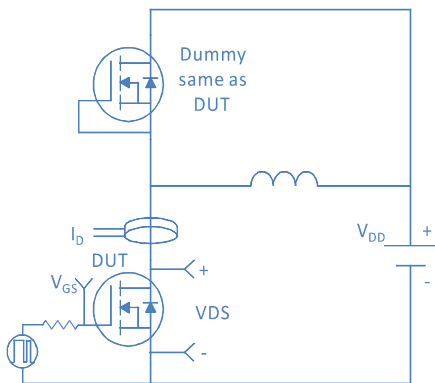


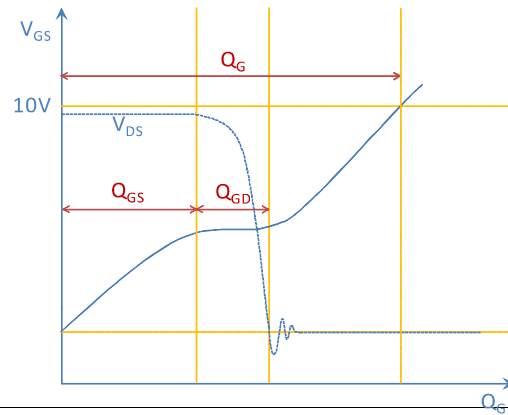
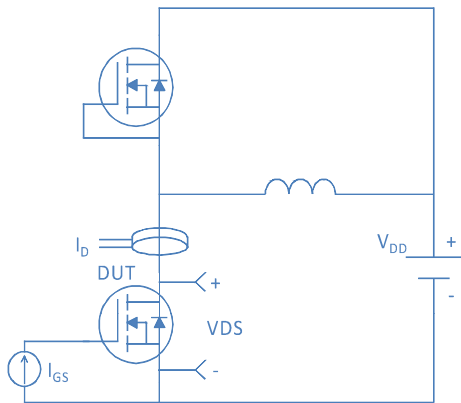
Figure 10. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



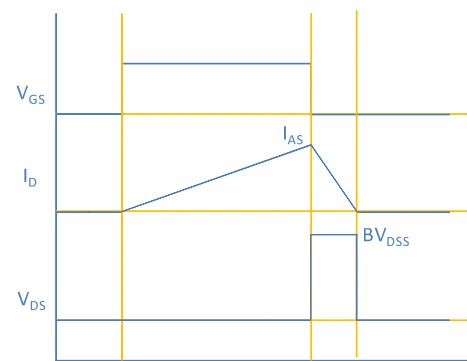
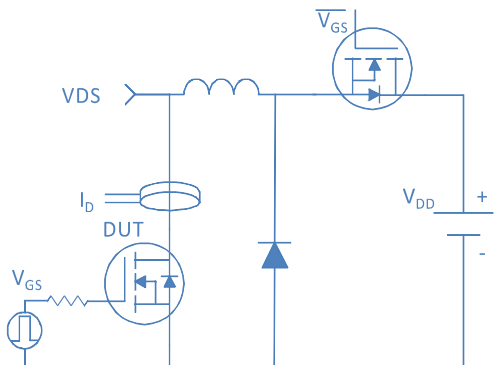
Inductive switching Test



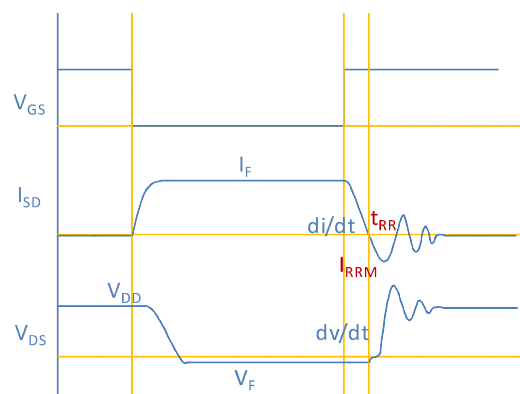
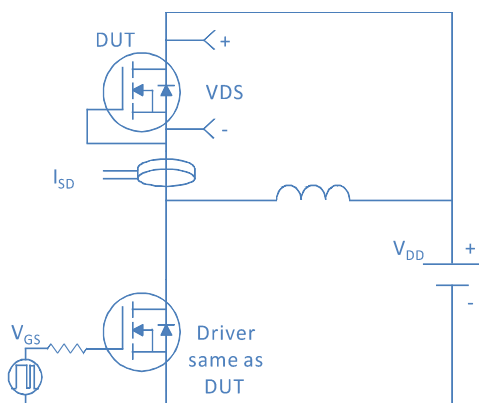
Gate Charge Test



Uclamped Inductive Switching (UIS) Test

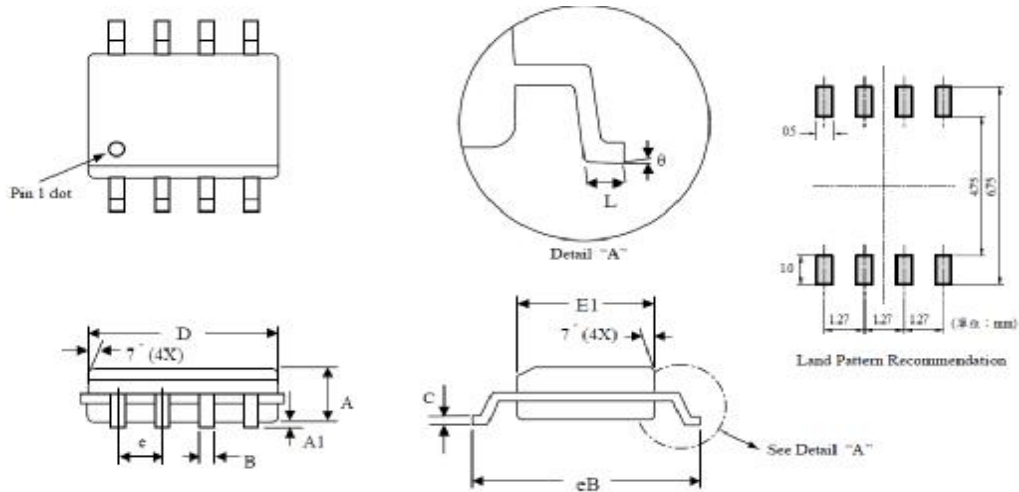


Diode Recovery Test



Package Outline

SOIC-8, 8 Leads



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.049	0.069
A1	0.10	0.25	0.004	0.010
B	0.31	0.51	0.012	0.020
C	0.17	0.25	0.007	0.010
D	4.69	5.00	0.185	0.197
E1	3.70	4.06	0.146	0.160
eB	5.80	6.20	0.228	0.244
e	1.27		0.050	
L	0.40	0.95	0.016	0.037
θ	0°	8°	0°	8°