

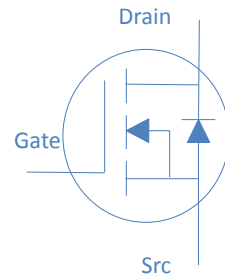
60V N-Ch Power MOSFET
Feature

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

V_{DS}		60	V
$R_{DS(on),typ}$	$V_{GS}=10V$	50	m Ω
I_D (Silicon Limited)		3.5	A

Application

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

SOT-23


Part Number	Package	Marking
HTJ600N06	SOT23	1G

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

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	$T_A=25^\circ\text{C}$	3.5	A
		$T_A=70^\circ\text{C}$	2.3	
Drain to Source Voltage	V_{DS}	-	60	V
Gate to Source Voltage	V_{GS}	-	± 20	V
Pulsed Drain Current	I_{DM}	-	14	A
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	1.25	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to 150	$^\circ\text{C}$

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$

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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	2	3.2	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=48V, T_j=25^\circ\text{C}$	-	-	1	μA
		$V_{GS}=0V, V_{DS}=40V, T_j=125^\circ\text{C}$	-	-	25	
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3A$	-	50	60	$m\Omega$
		$V_{GS}=5V, I_D=2A$	-	58	75	
Transconductance	g_{fs}	$V_{DS}=5V, I_D=3A$	-	12	-	S

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=30V, f=1\text{MHz}$	-	633	-	pF
Output Capacitance	C_{oss}		-	67	-	
Reverse Transfer Capacitance	C_{rss}		-	44	-	
Total Gate Charge	Q_g	$V_{DD}=30V, I_D=3A, V_{GS}=10V$	-	13.8	-	nC
Gate to Source Charge	Q_{gs}		-	2.8	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	4.0	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=1A, V_{GS}=10V, R_G=6\Omega,$	-	10	-	ns
Rise time	t_r		-	12	-	
Turn off Delay Time	$t_{d(off)}$		-	20	-	
Fall Time	t_f		-	15	-	

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

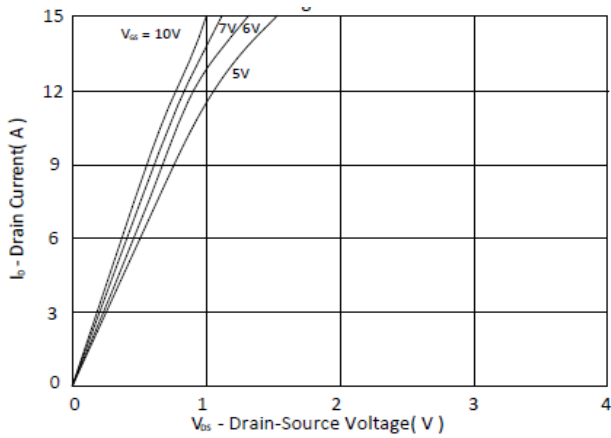


Figure 2. On-Resistance vs. Gate-Source Voltage

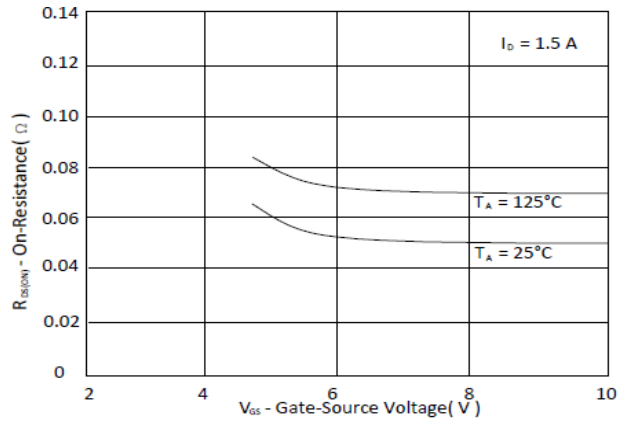


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

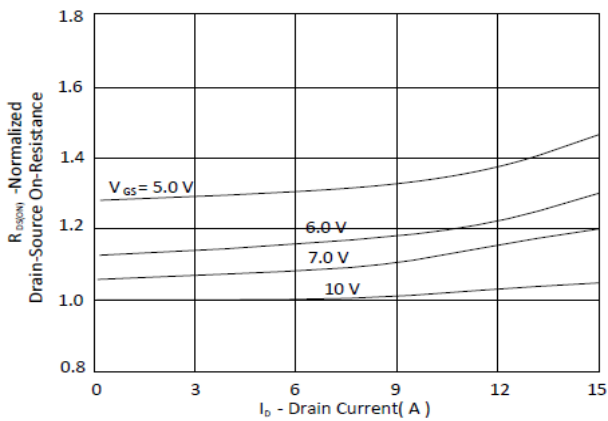


Figure 4. On-Resistance vs. Junction Temperature

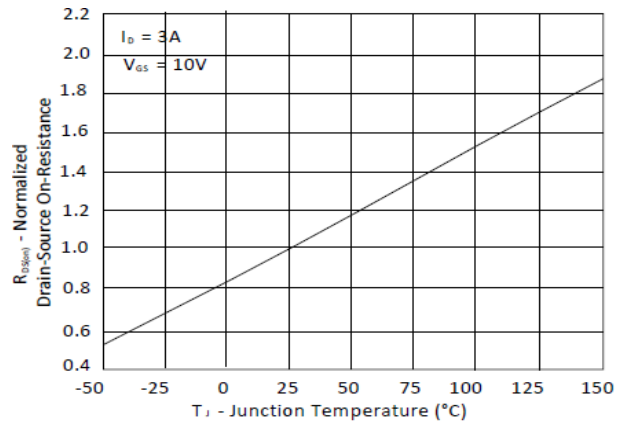


Figure 5. Typical Transfer Characteristics

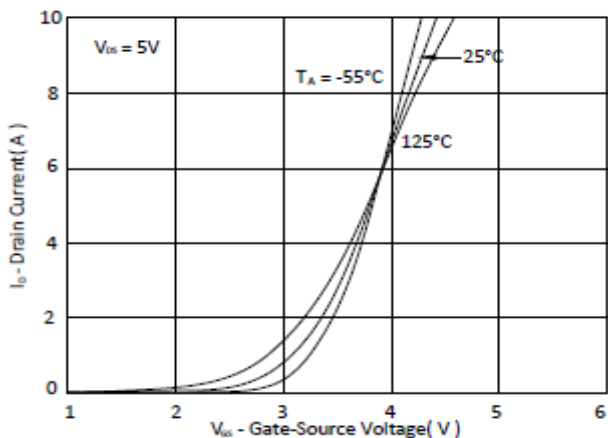


Figure 6. Typical Source-Drain Diode Forward Voltage

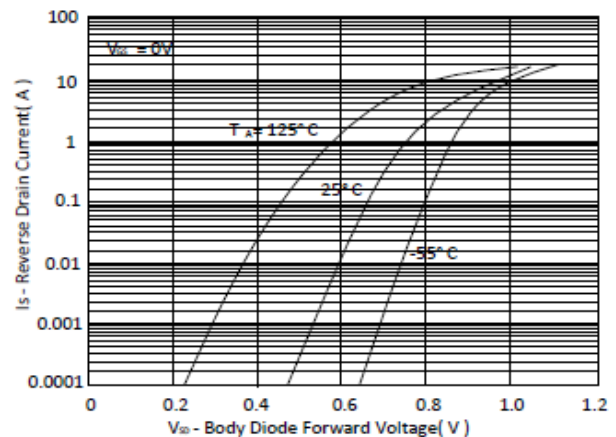


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

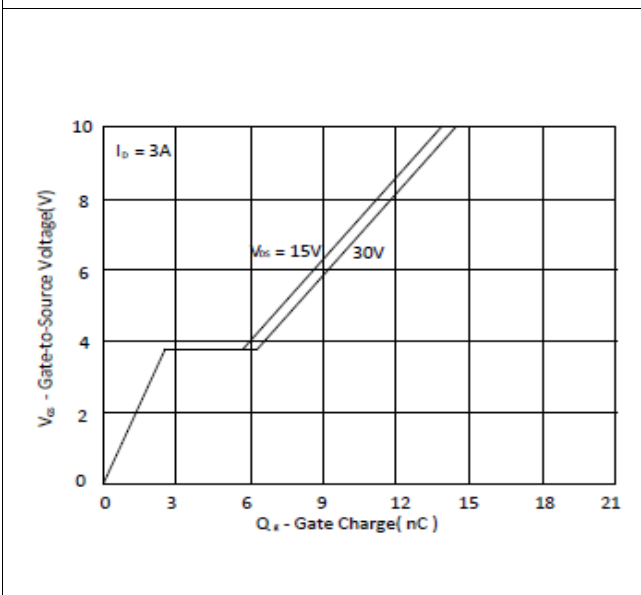


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

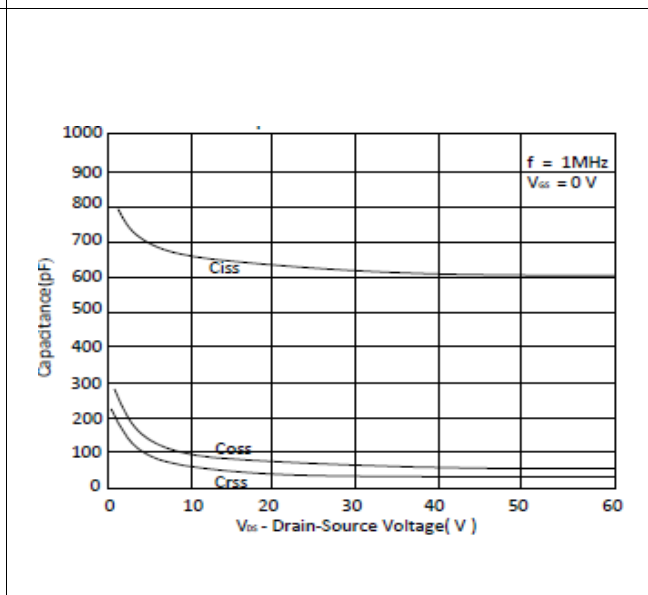


Figure 9. Maximum Safe Operating Area

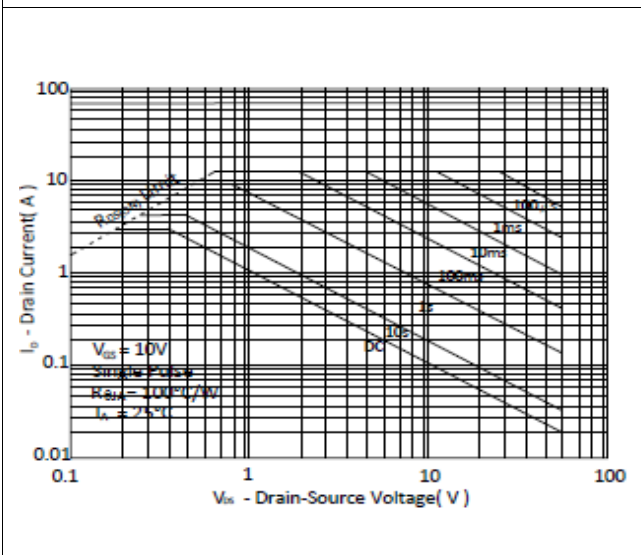


Figure 10. Single Pulse Maximum Power Dissipation

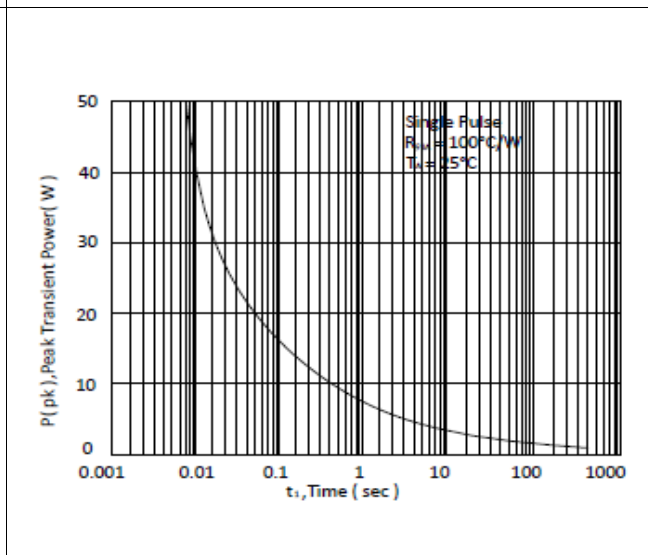
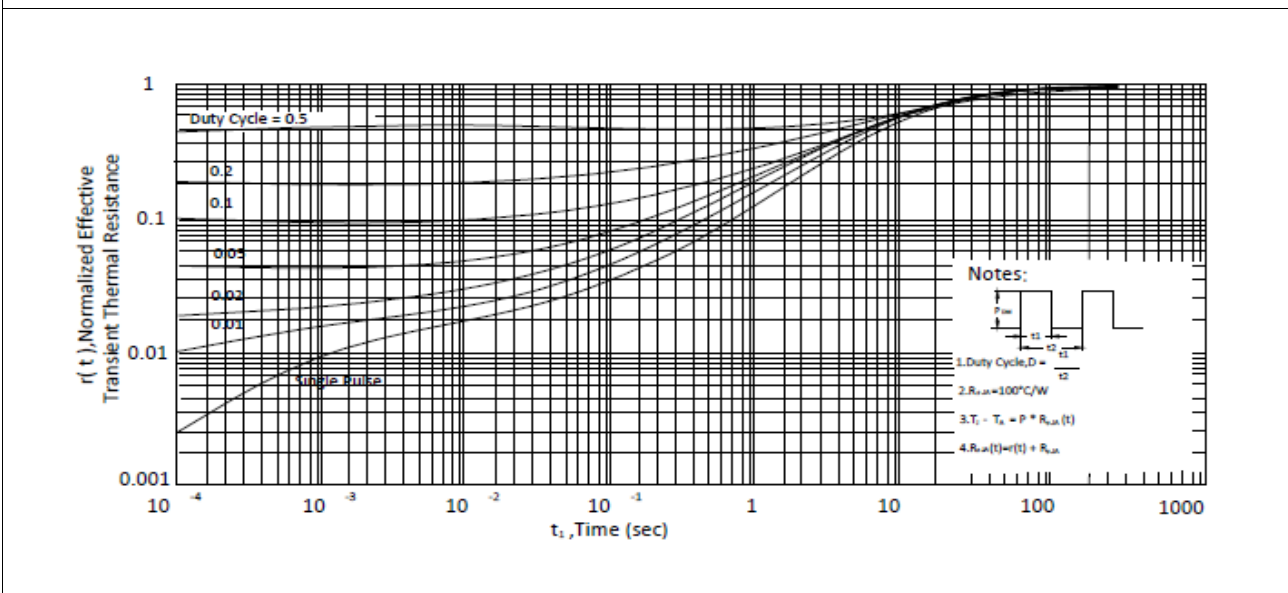
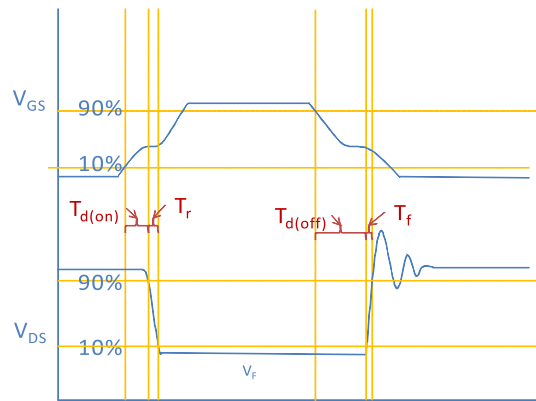


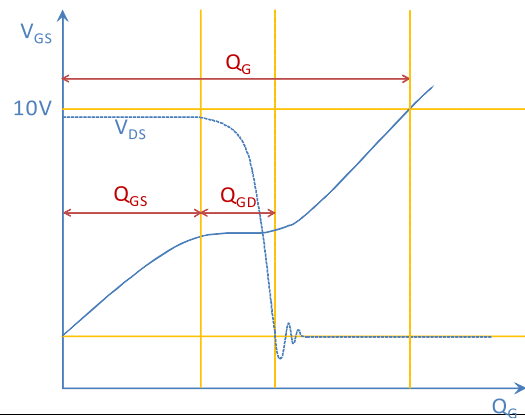
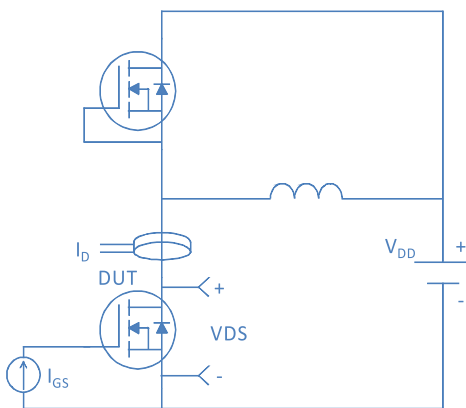
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



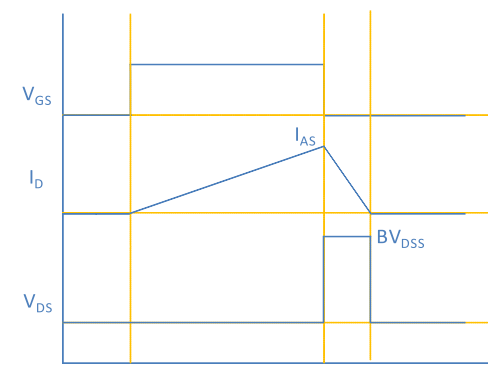
Inductive switching Test



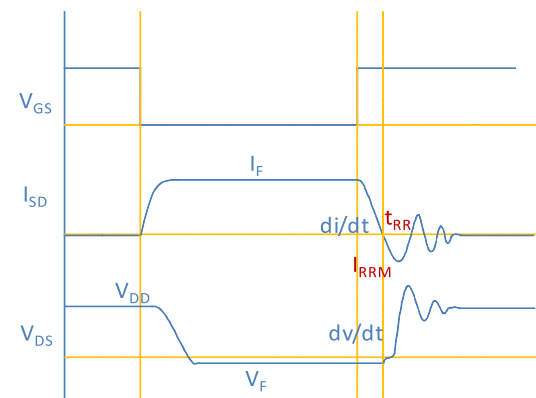
Gate Charge Test



Uclamped Inductive Switching (UIS) Test

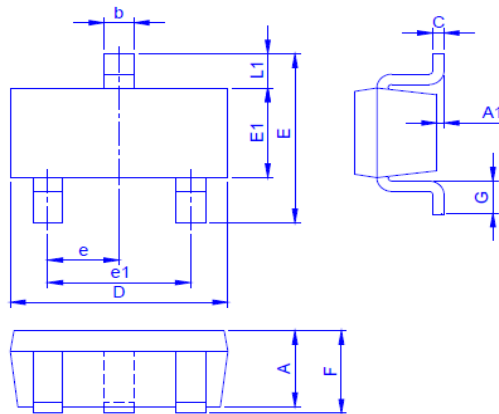


Diode Recovery Test



Package Outline

SOT-23, 3leads



Dimension in mm

Dimension	A	A1	A2	b	C	D	E	E1	e	e1	F	G	L1
Min.	0.7	0		0.35	0.1	2.8	2.6	1.5	0.9		0.8	0.3	0.55
Typ.						2.9	2.8	1.6	0.95	1.9			
Max.	1.12	0.1		0.5	0.2	3	3	1.7	1		1.2	0.6	0.65