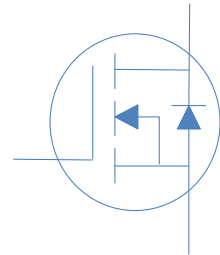
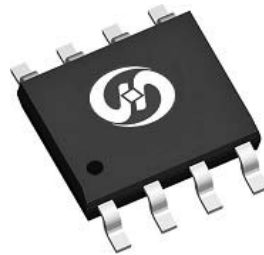


## 40V N-Ch Power MOSFET

$V_{DS}$		40	V
$R_{DS(on),typ}$	$V_{GS}=10V$	9.6	m
$R_{DS(on),typ}$	$V_{GS}=4.5V$	14.5	m
$I_D$		12	A

Part Number	Package	Marking
HTS130N04	SOIC-8	TS130N04



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

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	$I_D$	$T_A=25$	12	A
		$T_A=70$	10	
Drain to Source Voltage	$V_{DS}$	-	40	V
Gate to Source Voltage	$V_{GS}$	-	$\pm 20$	V
Pulsed Drain Current	$I_{DM}$	-	48	A
Power Dissipation	$P_D$	$T_A=25$	2.5	W
Operating and Storage Temperature	$T_J, T_{stg}$	-	-55 to 150	

### Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	$R_{JC}$	25	$^{\circ}W$
Thermal Resistance Junction-Ambient	$R_{JA}$	50	$^{\circ}W$

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

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250 A$	40	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250 A$	1	1.7	3	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=32V, T_J=25$	-	-	1	A
		$V_{GS}=0V, V_{DS}=30V, T_J=125$	-	-	25	
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=9A$	-	9.6	13	m
		$V_{GS}=4.5V, I_D=6A$	-	14.5	19	
Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=9A$	-	35	-	S

**Dynamic Characteristics**

Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=20V, f=1MHz$	-	916	-	pF
Output Capacitance	$C_{oss}$		-	134	-	
Reverse Transfer Capacitance	$C_{riss}$		-	111	-	
Total Gate Charge (10V)	$Q_g(10V)$	$V_{DD}=20V, I_D=9A, V_{GS}=10V$	-	24	-	nC
Gate to Source Charge	$Q_{gs}$		-	2.6	-	
Gate to Drain (Miller) Charge	$Q_{gd}$		-	7.5	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=20V, I_D=1A, V_{GS}=10V, R_G=6 \Omega$	-	5	-	ns
Rise time	$t_r$		-	10	-	
Turn off Delay Time	$t_{d(off)}$		-	15	-	
Fall Time	$t_f$		-	15	-	

**Reverse Diode Characteristics**

Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_F=9A$	-		1.3	V
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Fig 1. Typical Output Characteristics

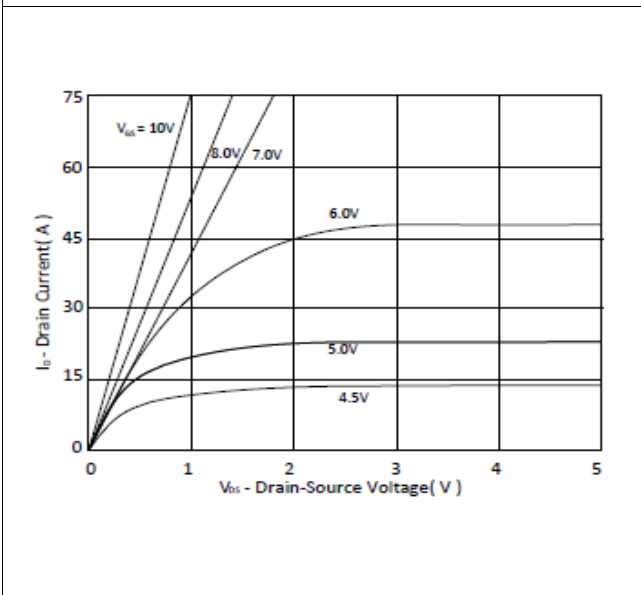


Figure 2. On-Resistance vs. Gate-Source Voltage

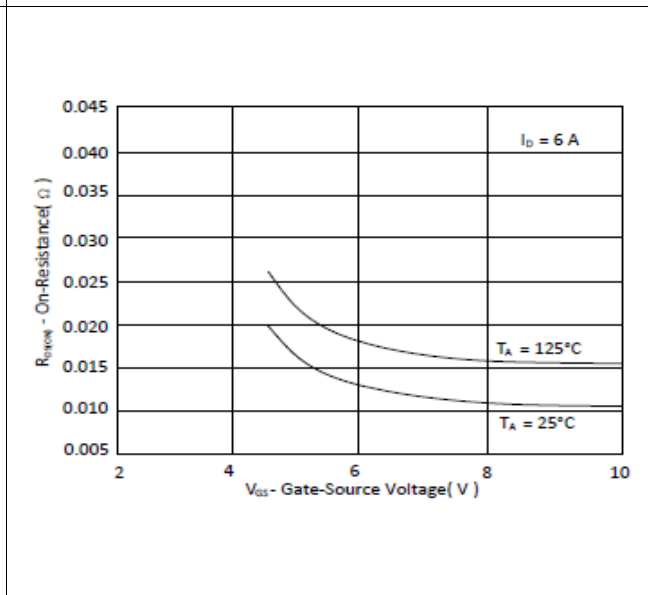


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

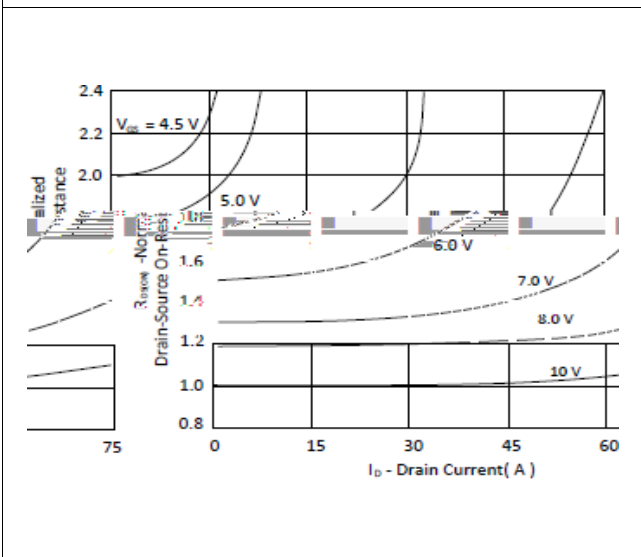


Figure 4. Normalized On-Resistance vs. Junction Temperature

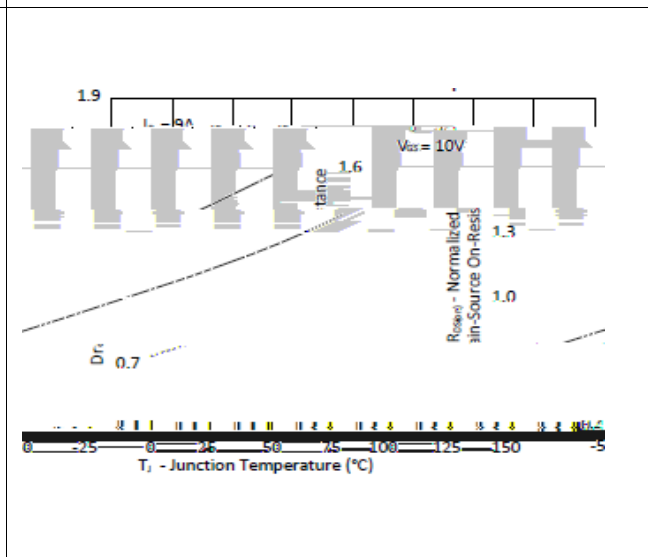


Figure 5. Typical Transfer Characteristics

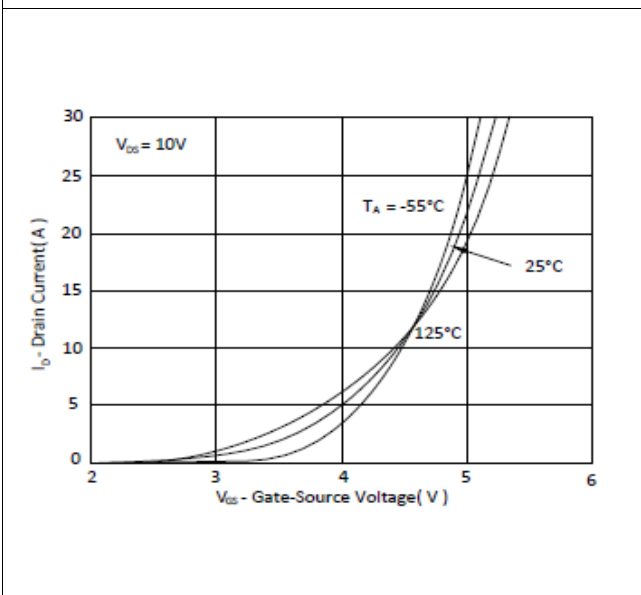


Figure 6. Typical Source-Drain Diode Forward Voltage

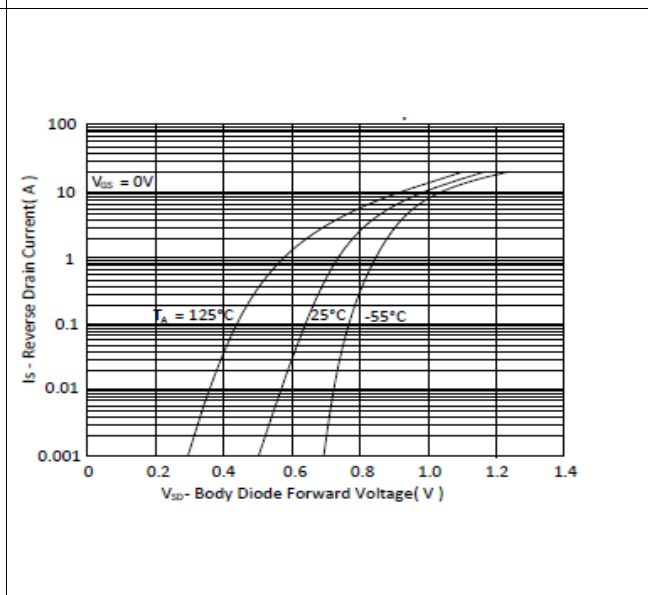


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

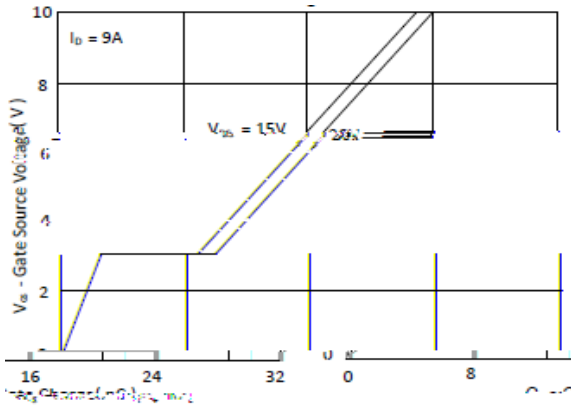


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

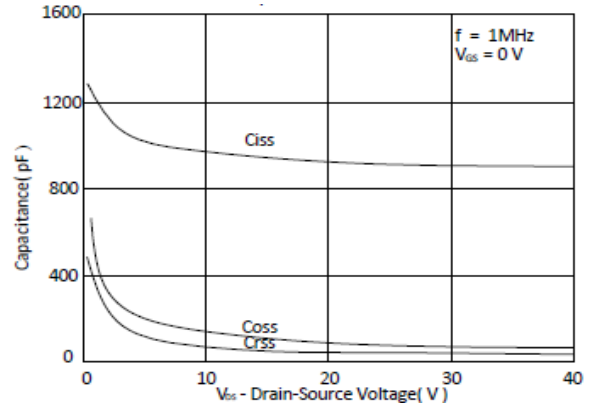


Figure 9. Maximum Safe Operating Area

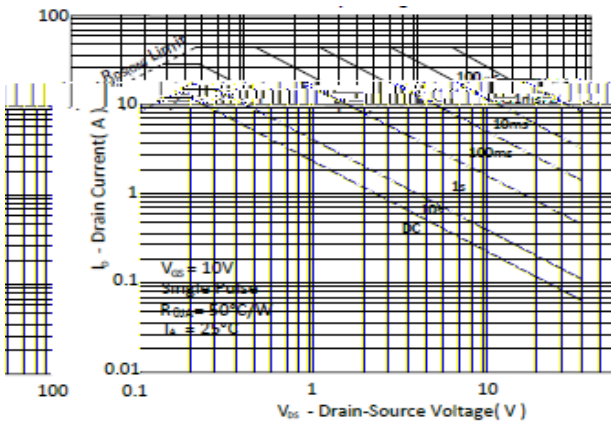


Figure 10. Single Pulse Maximum Power Dissipation

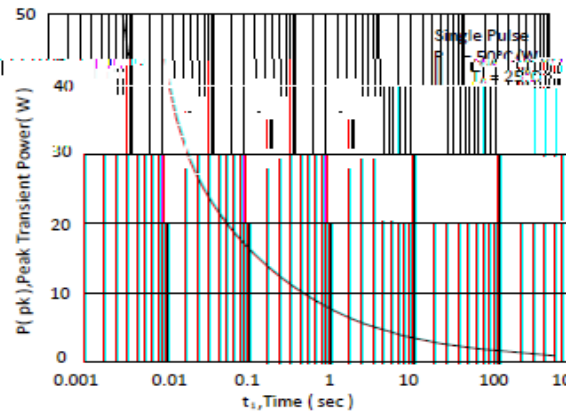
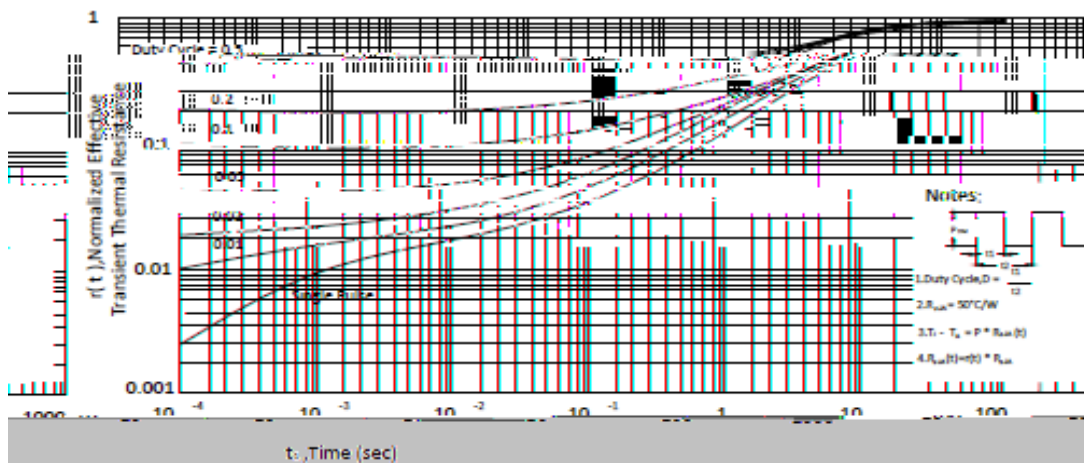


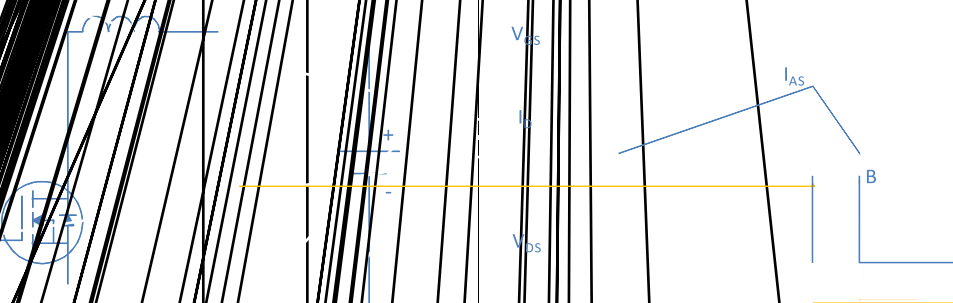
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



Diode switching Test

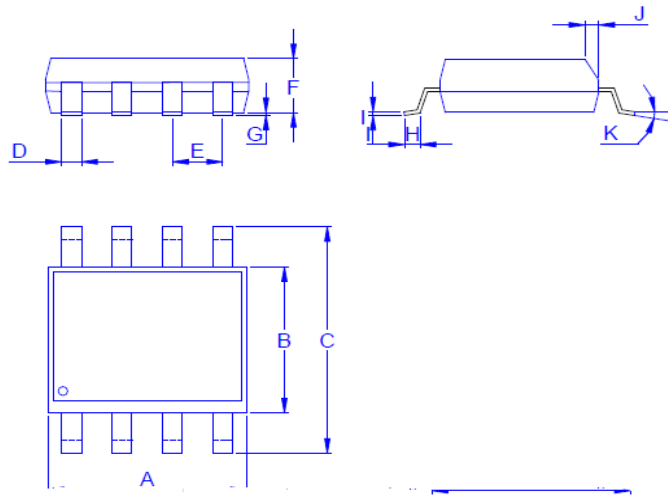
Gate Charge Test

Undamped Inductive Switching (UIS) Test



Diode Recovery Test

SOIC-8, 8 leads



Dimension in mm

Dimension	A	B	C	D	E	F	G	H	I	J	K
Min.	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°