



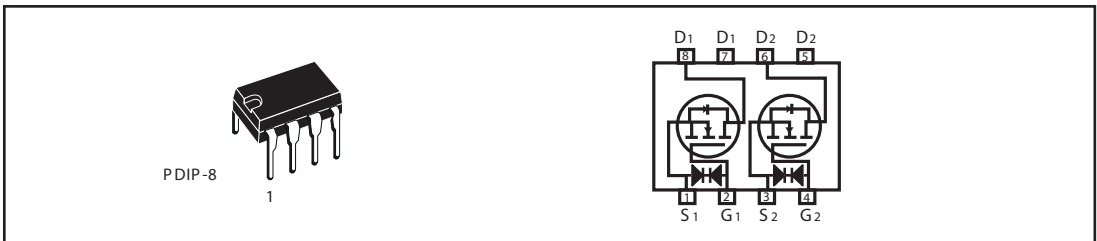
STA6610

Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
30V	7.6A	23 @ V _{GS} = 10V 35 @ V _{GS} = 4.5V

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.



ABSOLUTE MAXIMUM RATINGS (T_A=25 °C unless otherwise noted)

Parameter	Symbol	N-Channel	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous ^a @ T _a	I _D	25 °C	7.6
		70 °C	6
-Pulsed ^b	I _{DM}	30	A
Drain-Source Diode Forward Current ^a	I _S	1.7	A
Maximum Power Dissipation ^a	P _D	T _a =25 °C	3
		T _a =70 °C	2
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	R _{θJA}	41.5	°C/W
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ELECTRICAL CHARACTERISTICS (T_A=25 °C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±10	uA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0	1.8	3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =7A		17	23	m ohm
		V _{GS} =4.5V, I _D =5A		23	35	m ohm
On-State Drain Current	I _{D(ON)}	V _{DS} =15V, V _{GS} =10V	20			A
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =7A		15		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C _{ISS}	V _{DS} =15V, V _{GS} =0V f=1.0MHz		620		pF
Output Capacitance	C _{OSS}			190		pF
Reverse Transfer Capacitance	C _{RSS}			115		pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =15V, I _D =7A, R _L =2.1 ohm, V _{GS} =10V, R _{GEN} =6 ohm		13		ns
Rise Time	t _r			14.4		ns
Turn-Off Delay Time	t _{D(OFF)}			40		ns
Fall Time	t _f			8.4		ns
Total Gate Charge	Q _g	V _{DS} =15V, I _D =7A, V _{GS} =10V		13		nC
		V _{DS} =15V, I _D =7A, V _{GS} =4.5V		6.8		nC
Gate-Source Charge	Q _{gs}	V _{DS} =15V, I _D =7A, V _{GS} =10V		1.5		nC
Gate-Drain Charge	Q _{gd}			3.5		nC

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ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS^b						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}, I_s = 1.7\text{A}$		0.8	1.2	V

Notes

- a.Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.
- b.Pulse Test:Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.
- c.Guaranteed by design, not subject to production testing.

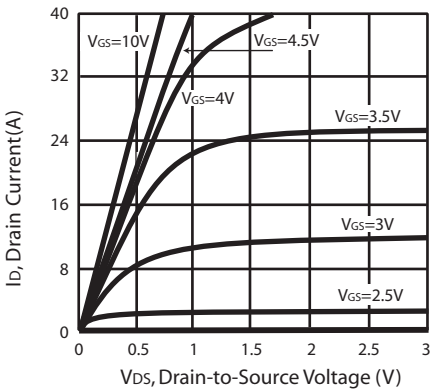


Figure 1. Output Characteristics

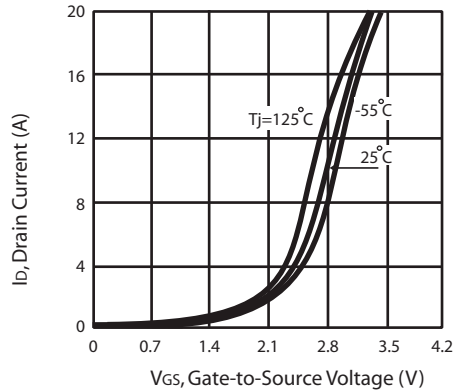


Figure 2. Transfer Characteristics

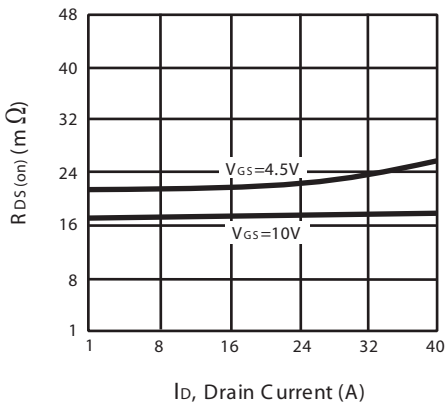


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

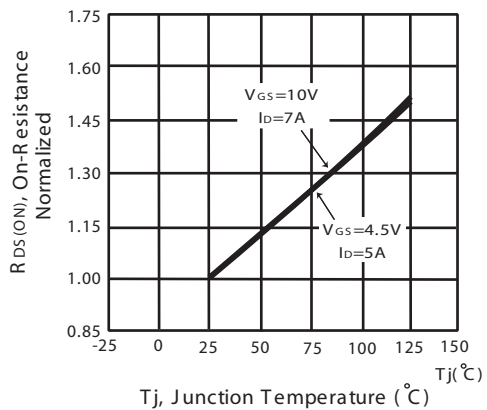


Figure 4. On-Resistance Variation with Drain Current and Temperature

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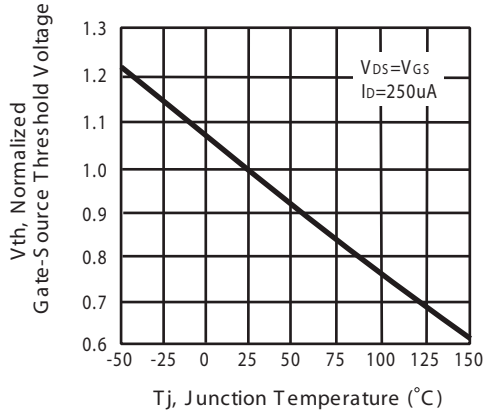


Figure 5. Gate Threshold Variation with Temperature

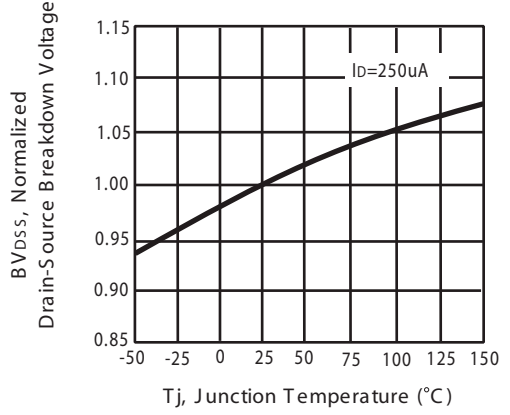


Figure 6. Breakdown Voltage Variation with Temperature

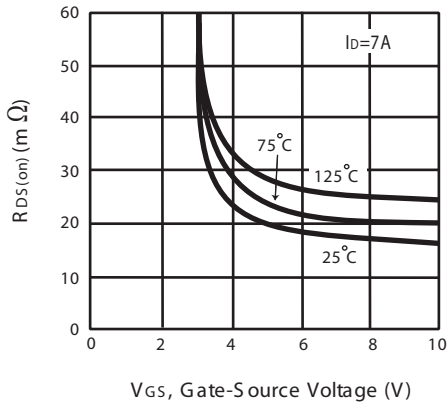


Figure 7. On-Resistance vs. Gate-Source Voltage

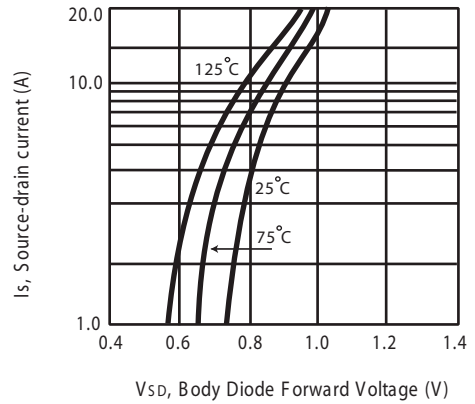


Figure 8. Body Diode Forward Voltage Variation with Source Current

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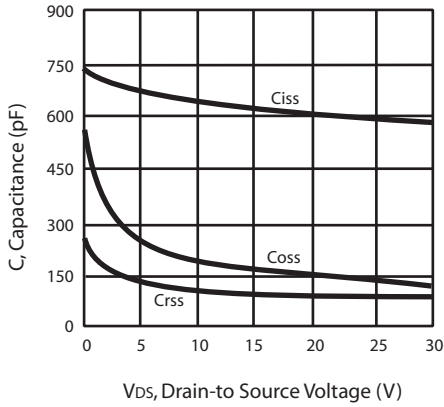


Figure 8. Capacitance

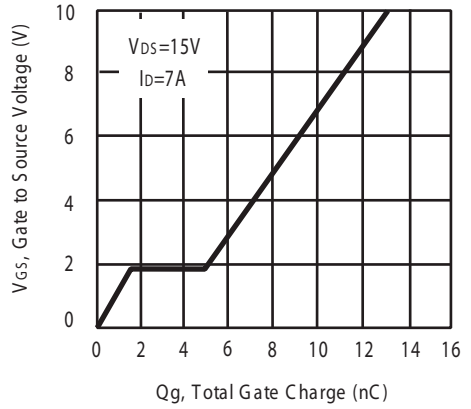


Figure 9. Gate Charge

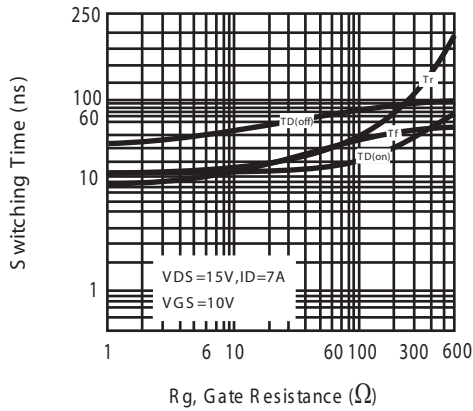


Figure 11. switching characteristics

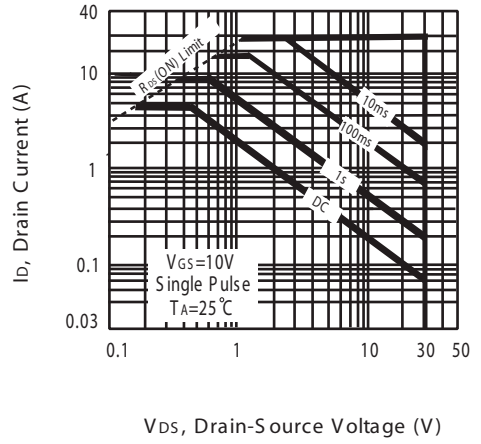
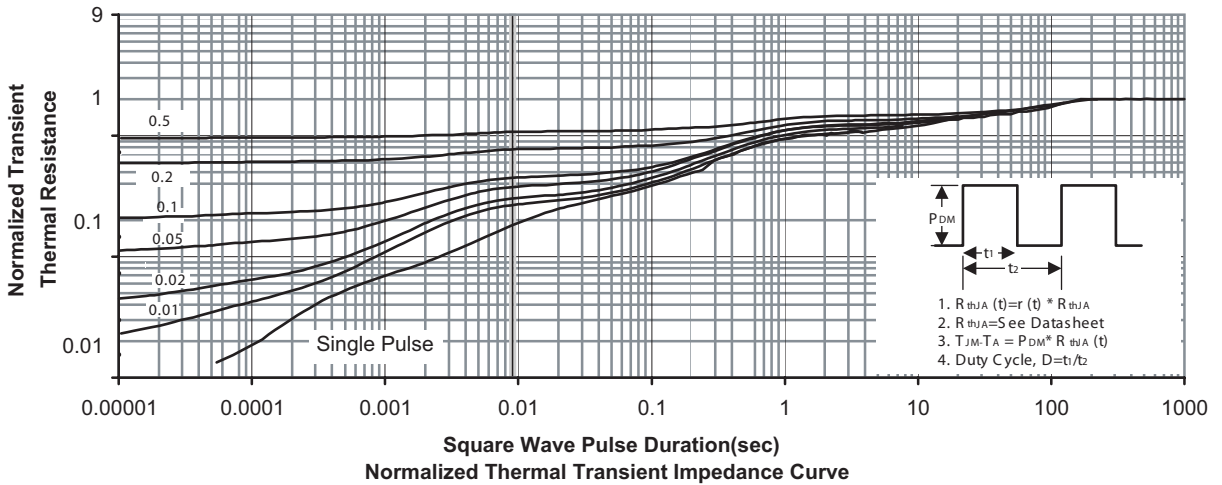


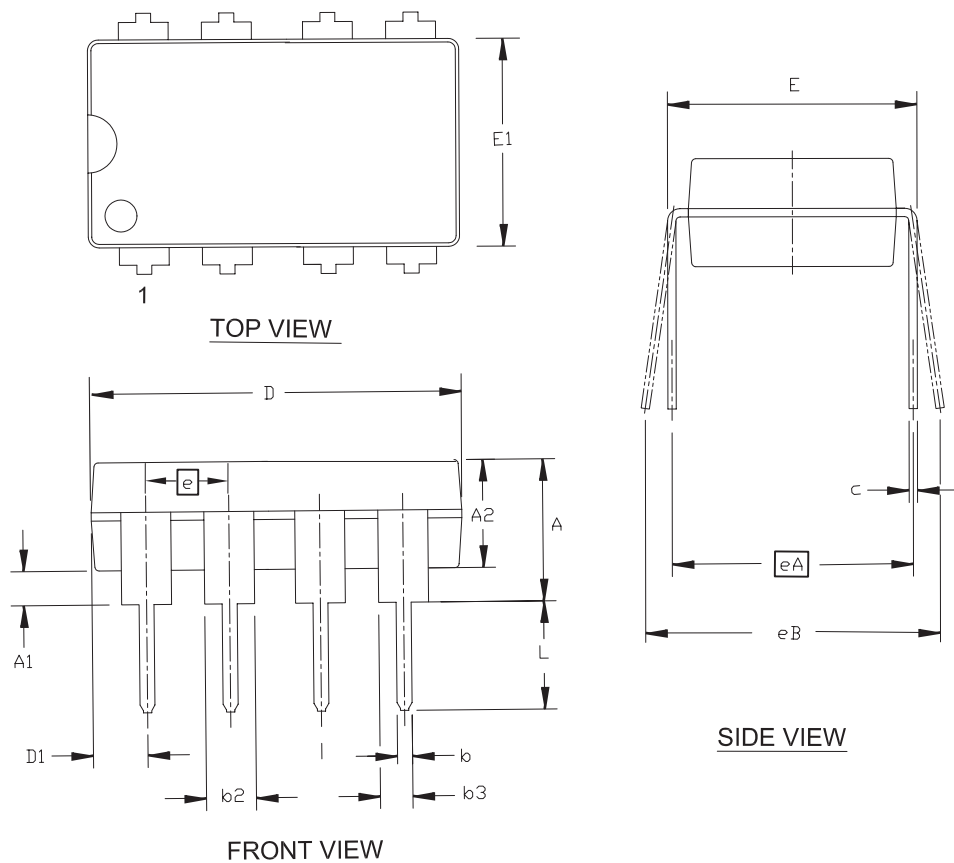
Figure 10. Maximum Safe Operating Area



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PACKAGE OUTLINE DIMENSIONS

PDIP 8



SYMBOL	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.145	.172	.200	3.68	4.37	5.08
A1	.020	-	-	0.51	-	-
A2	.125	.130	.135	3.18	3.30	3.43
b	.015	.018	.021	0.38	0.46	0.53
c	.009	.012	.014	0.23	0.30	0.36
b2	.045	.060	.070	1.14	1.52	1.78
b3	.030	.039	.045	0.76	0.99	1.14
L	.125	.132	.140	3.18	3.35	3.56
e	.090	.100	.110	2.29	2.54	2.79
D	.373	.386	.400	9.47	9.80	10.16
D1	.030	.045	.060	0.76	1.14	1.52
E	.300	.310	.320	7.62	7.87	8.13
E1	.245	.250	.255	6.22	6.35	6.48
eA	.280	-	-	7.11	-	-
eB	.310	.325	.365	7.87	8.26	9.27