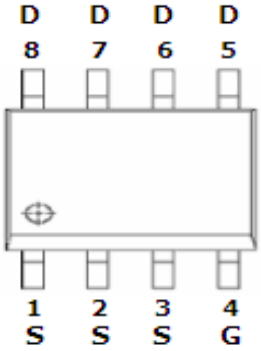
STP4407

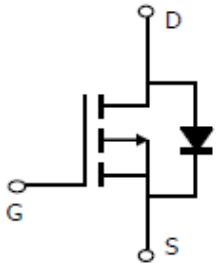
P Channel Enhancement Mode MOSFET
- 12A

DESCRIPTION

The STP4407 is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density, DMOS trench technology.
This high density process is especially tailored to minimize on-state resistance.
These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other batter powered circuits where high-side switching.

PIN CONFIGURATION
SOP-8

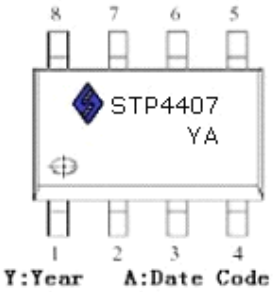




FEATURE

- -30V/-12A, $R_{DS(ON)}$ = 9mΩ @V_{GS} = -20V
- -30V/-12A, $R_{DS(ON)}$ = 10mΩ @V_{GS} = -10V
- -30V/-10A, $R_{DS(ON)}$ = 15mΩ @V_{GS} = -5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP-8 package design

PART MARKING
SOP-8



120 Bentley Square, Mountain View, Ca 94040 USA
TEL: (650) 9389294 FAX: (650) 9389295

ABSOULTE MAXIMUM RATINGS (Ta = 25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		VDSS	-30	V
Gate-Source Voltage		VGSS	±23	V
Continuous Drain Current (TJ=150℃)	TA=25℃ TA=70℃	ID	-12 -10	A
Pulsed Drain Current		IDM	-60	A
Continuous Source Current (Diode Conduction)		IS	-30	A
Power Dissipation	TA=25℃ TA=70℃	PD	3.1 2.0	W
Operation Junction Temperature		TJ	-55/150	℃
Storage Temperature Range		TSTG	-55/150	℃
Thermal Resistance-Junction to Ambient		RθJA	70	℃/W

120 Bentley Square, Mountain View, Ca 94040 USA
TEL: (650) 9389294 FAX: (650) 9389295

ELECTRICAL CHARACTERISTICS (Ta = 25℃ Unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,ID=-250uA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},ID=-250uA	-1.0		-3.0	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±25V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS} T_J=55℃	V_{DS}=-30V,V_{GS}=0V			-1	uA
		V_{DS}=-30V,V_{GS}=0V			-5	
On-State Drain Current	$I_{D(on)}$	V_{DS}=-5V,V_{GS}=-10V	-60			A
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=-20V,I_D=-12A V_{GS}=-10V,I_D=-12A V_{GS}=-5V, I_D=-10A		9 10 15		mΩ
Forward Transconductance	gfs	V_{DS}=-5V,I_D=-10A		26		S
Diode Forward Voltage	V_{SD}	I_S=-1.0A,V_{GS}=0V			-1	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-15V,V_{GS}=0V f=1MHz		30		nC
Gate-Source Charge	Q_{gs}			4.3		
Gate-Drain Charge	Q_{gd}			10		
Input Capacitance	C_{iss}	V_{DS} ==-15V,VGS=0V f=1MHz		2076	2500	pF
Output Capacitance	C_{oss}			400		
Reverse TransferCapacitance	C_{rss}			302		
Turn-On Time	$t_{d(on)}$ tr	V_{DD}=15V,R_L=1.25Ω I_D=-1A,V_{GEN}=-10V R_G=3Ω		10.4		nS
				24		
Turn-Off Time	$t_{d(off)}$ tf			12.6		
				12		

120 Bentley Square, Mountain View, Ca 94040 USA
TEL: (650) 9389294 FAX: (650) 9389295

TYPICAL CHARACTERICTICS

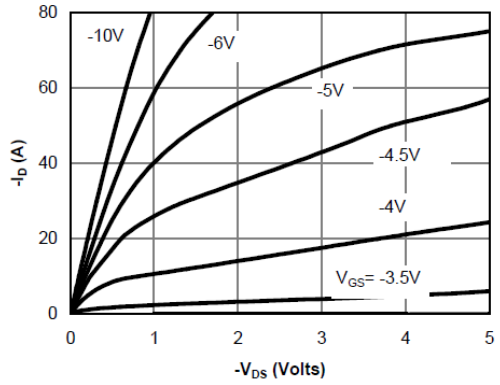


Figure 1: On-Region Characteristics

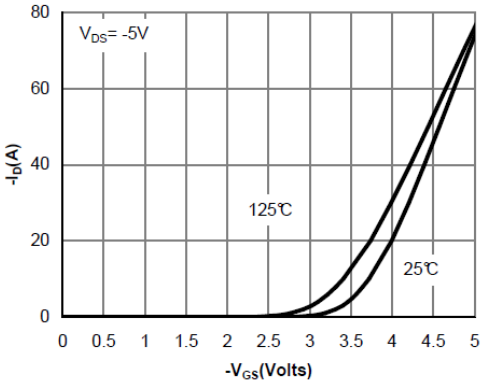


Figure 2: Transfer Characteristics

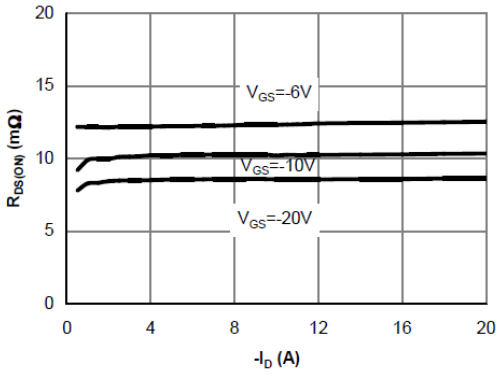


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

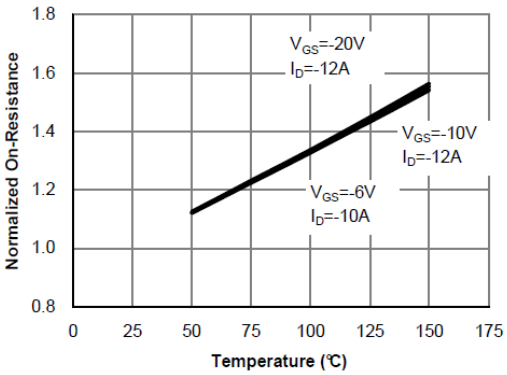


Figure 4: On-Resistance vs. Junction Temperature

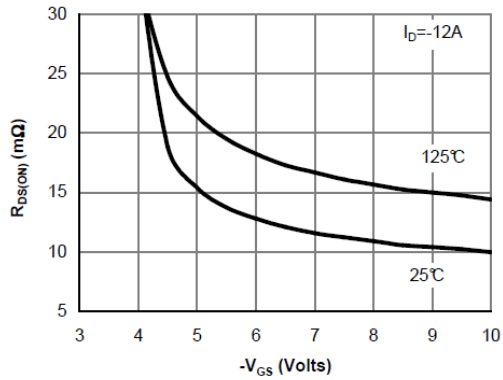


Figure 5: On-Resistance vs. Gate-Source Voltage

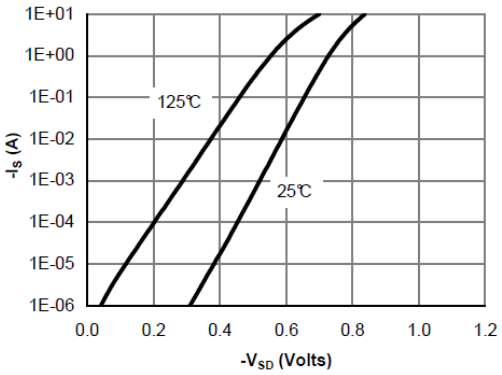


Figure 6: Body-Diode Characteristics

120 Bentley Square, Mountain View, Ca 94040 USA
TEL: (650) 9389294 FAX: (650) 9389295

TYPICAL CHARACTERICTICS

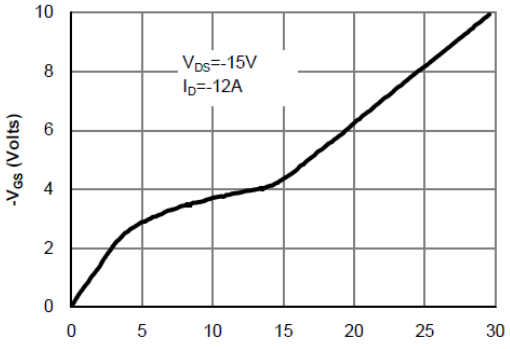


Figure 7: Gate-Charge Characteristics

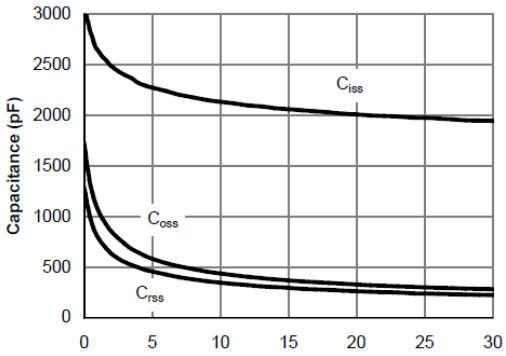


Figure 8: Capacitance Characteristics

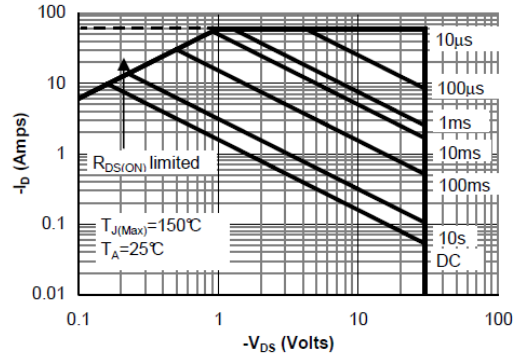


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

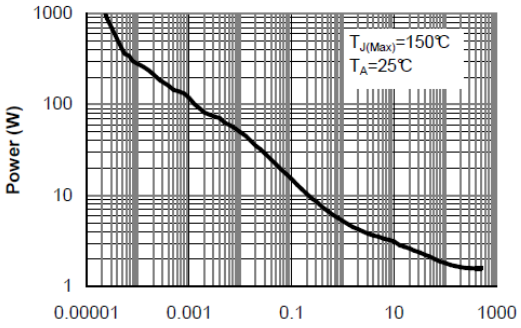


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

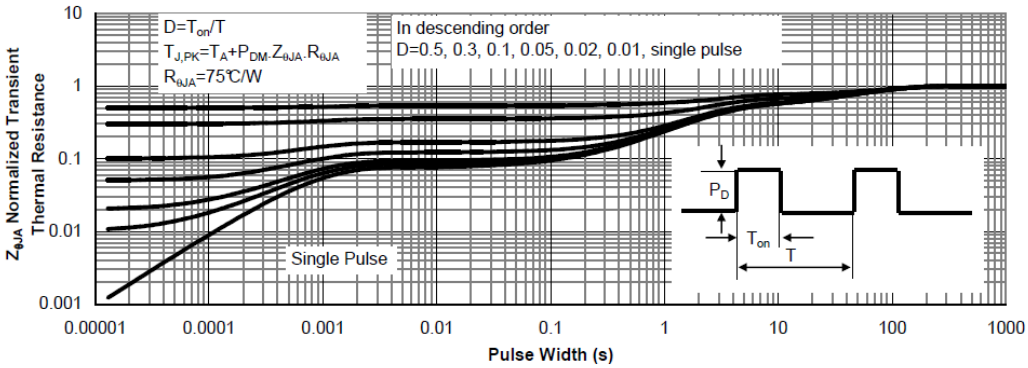
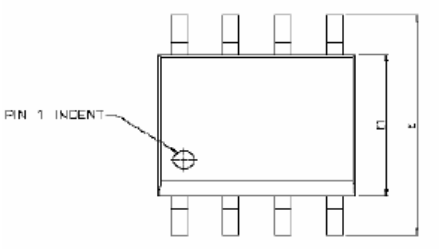
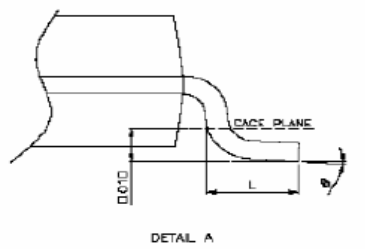


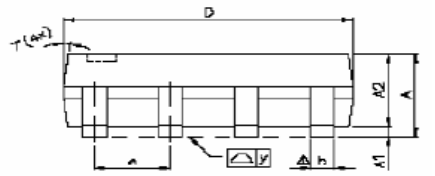
Figure 11: Normalized Maximum Transient Thermal Impedance(Note E)

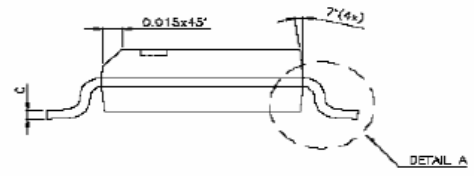
120 Bentley Square, Mountain View, Ca 94040 USA
TEL: (650) 9389294 FAX: (650) 9389295

PACKAGE OUTLINE SOP-8P









SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	——	0.25	0.004	——	0.010
A2	——	1.45	——	——	0.057	——
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	——	1.27	——	——	0.050	——
L	0.38	0.71	1.27	0.015	0.028	0.050
⚠2 y	——	——	0.076	——	——	0.003
θ	0°	——	8°	0°	——	8°

120 Bentley Square, Mountain View, Ca 94040 USA
TEL: (650) 9389294 FAX: (650) 9389295