



CST60P03F P-Ch 30V Fast Switching MOSFETs

- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology



CST60P03F Product Summary

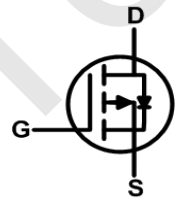
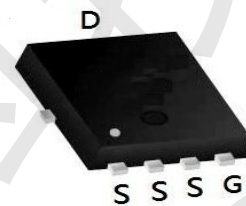
BVDSS	RDSON	ID
-30V	7.2mΩ	-60A

CST60P03F Description

The CST60P03F is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The CST60P03F meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

CST60P03F PDFN5060-8L Pin Configuration



CST60P03F Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{DS}	-30	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _C =25°C	I _D	-60	A
	T _C =100°C		-35	
Pulsed Drain Current ¹		I _{DM}	-168	A
Single Pulse Avalanche Energy ²		EAS	45	mJ
Total Power Dissipation	T _C =25°C	P _D	45	W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C

CST60P03F Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ³	R _{θJA}	65	°C/W
Thermal Resistance from Junction-to-Case	R _{θJC}	3.36	°C/W



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CST60P03F Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Static Characteristics							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30	-	-	V	
Gate-body Leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$	$T_J = 25^\circ\text{C}$	-	-	-1	μA
			$T_J = 100^\circ\text{C}$	-	-	-100	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-	-2.5	V	
Drain-Source On-Resistance ⁴	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -30A$	-	7.2	14	m Ω	
		$V_{GS} = -4.5V, I_D = -15A$	-	10	22		
Forward Transconductance ⁴	g_{fs}	$V_{DS} = -5V, I_D = -30A$	-	57	-	S	
Dynamic Characteristics⁵							
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1\text{MHz}$	-	2396	-	pF	
Output Capacitance	C_{oss}		-	325	-		
Reverse Transfer Capacitance	C_{rss}		-	283	-		
Gate Resistance	R_g	$f = 1\text{MHz}$	-	10.5	-	Ω	
Switching Characteristics⁵							
Total Gate Charge	Q_g	$V_{GS} = -10V, V_{DS} = -15V, I_D = -30A$	-	30	-	nC	
Gate-Source Charge	Q_{gs}		-	5	-		
Gate-Drain Charge	Q_{gd}		-	7.5	-		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = -10V, V_{DD} = -15V, R_G = 3\Omega, I_D = -30A$	-	14.1	-	ns	
Rise Time	t_r		-	20	-		
Turn-Off Delay Time	$t_{d(off)}$		-	94	-		
Fall Time	t_f		-	65	-		
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -30A, di/dt = 100A/\mu s$	-	19	-	ns	
Body Diode Reverse Recovery Charge	Q_{rr}		-	9	-	nC	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴	V_{SD}	$I_S = -1A, V_{GS} = 0V$	-	-	-1.2	V	
Continuous Source Current	I_S	$T_C = 25^\circ\text{C}$	-	-	-60	A	

Note :

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ\text{C}$.
2. The EAS data shows Max. rating . The test condition is $V_{DD} = -25V, V_{GS} = -10V, L = 0.1\text{mH}, I_{AS} = -30A$.
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. This value is guaranteed by design hence it is not included in the production test.



CST60P03F Typical Characteristics

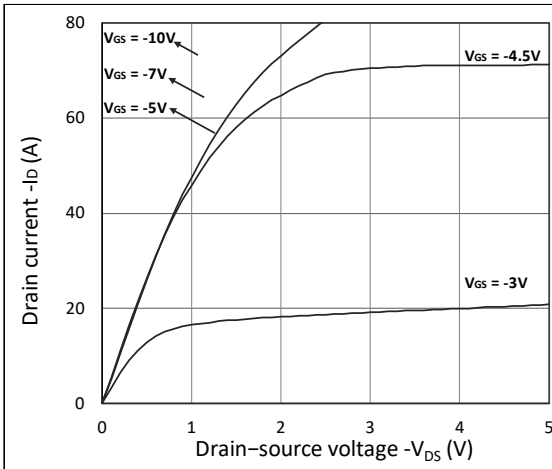


Figure 1. Output Characteristics

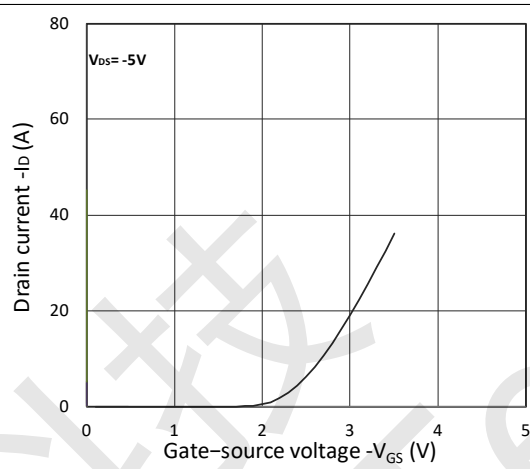


Figure 2. Transfer Characteristics

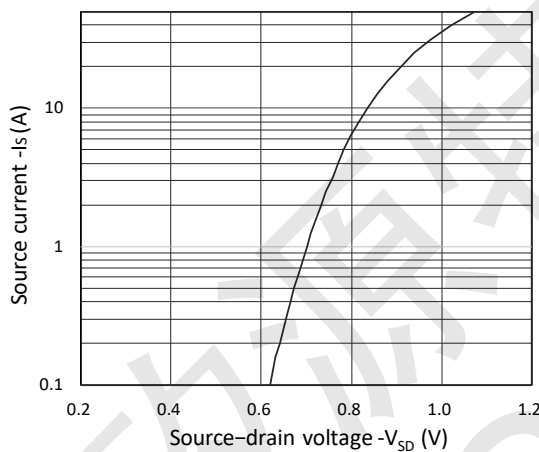


Figure 3. Forward Characteristics of Reverse

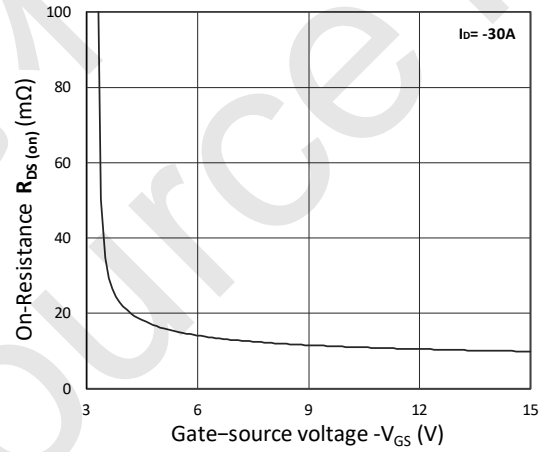


Figure 4. $R_{DS(on)}$ vs. V_{GS}

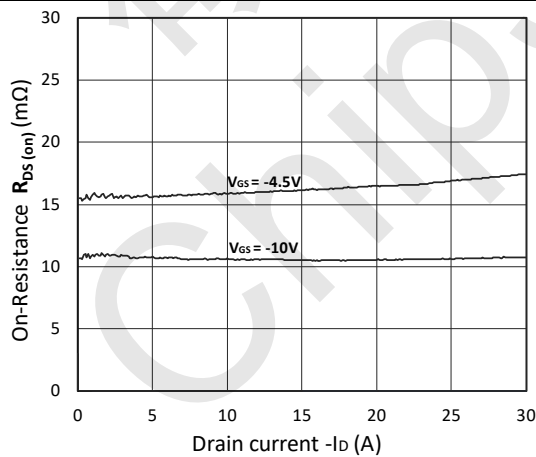


Figure 5. $R_{DS(on)}$ vs. I_D

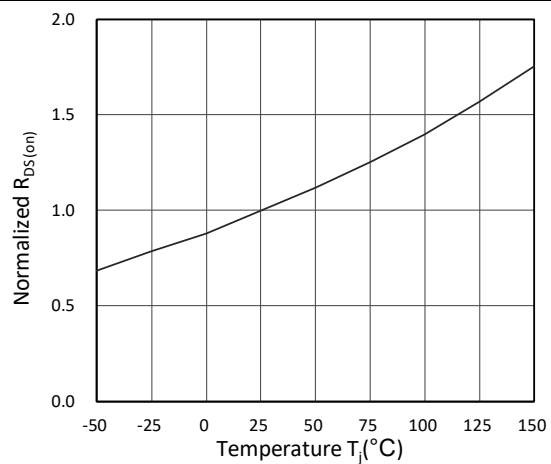


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature



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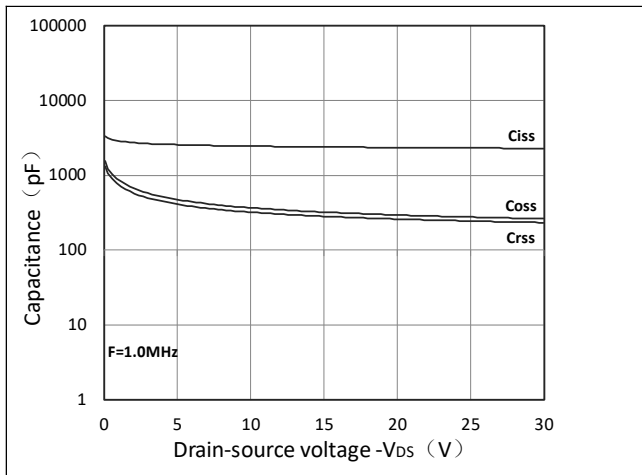


Figure 7. Capacitance Characteristics

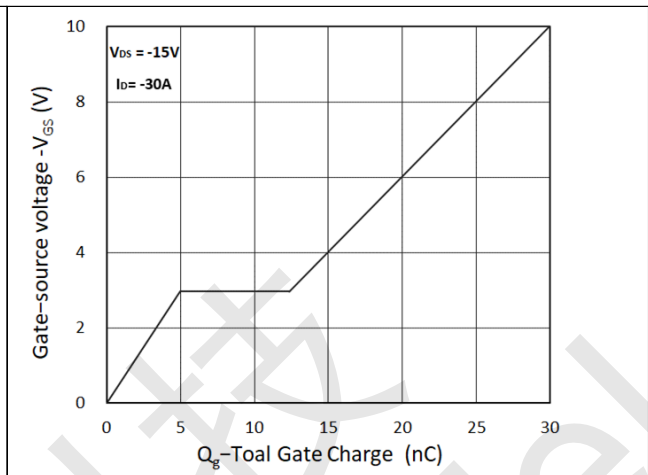


Figure 8. Gate Charge Characteristics

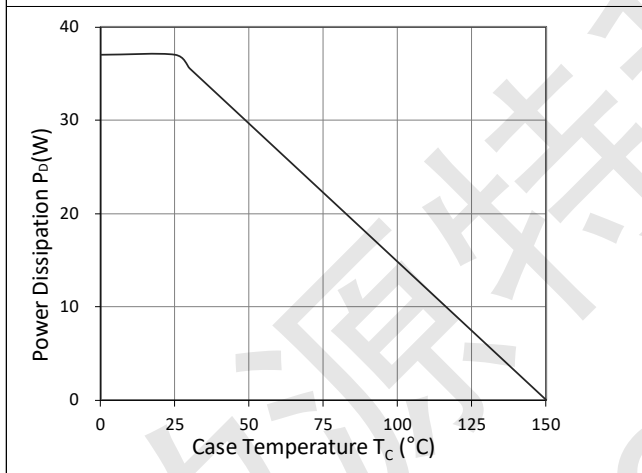


Figure 9. Power Dissipation

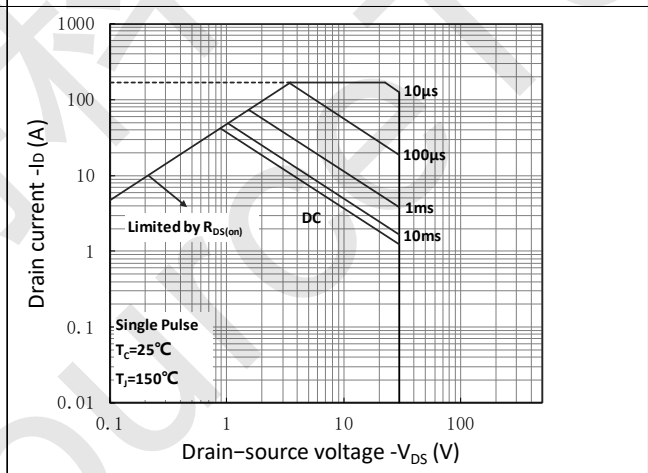


Figure 10. Safe Operating Area

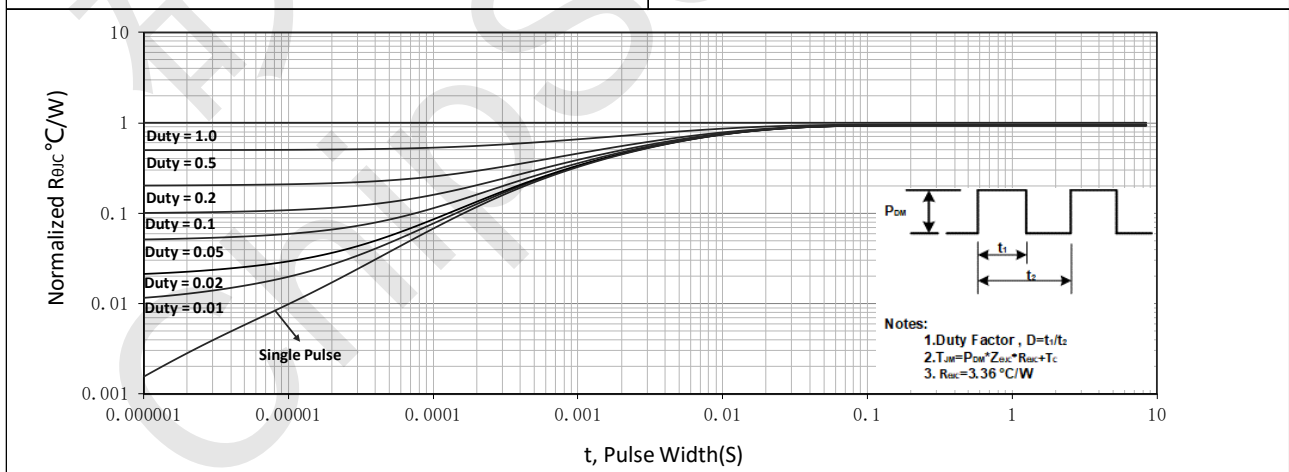
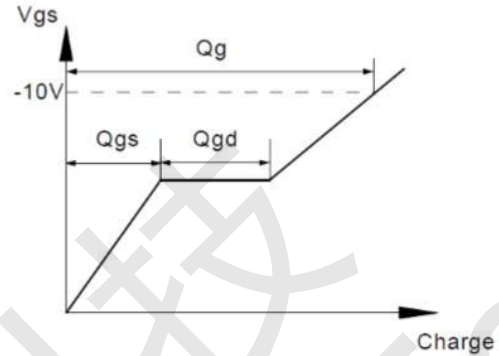
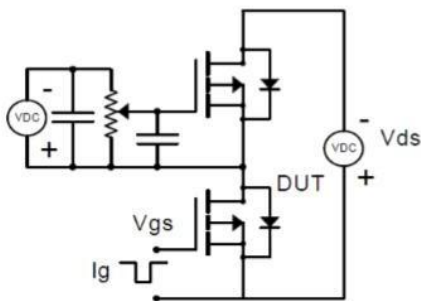


Figure 11. Normalized Maximum Transient Thermal Impedance

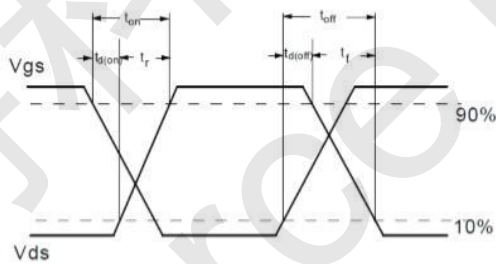
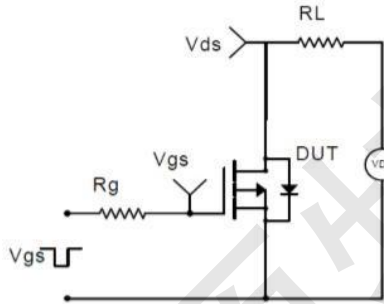


CST60P03F Test Circuit

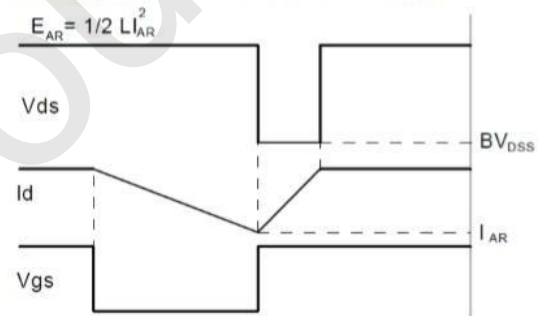
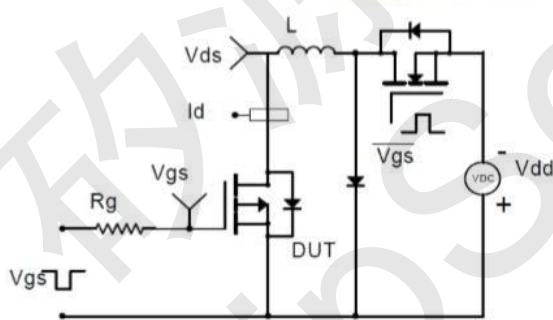
Gate Charge Test Circuit & Waveform



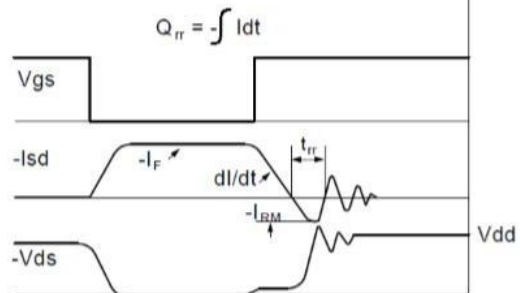
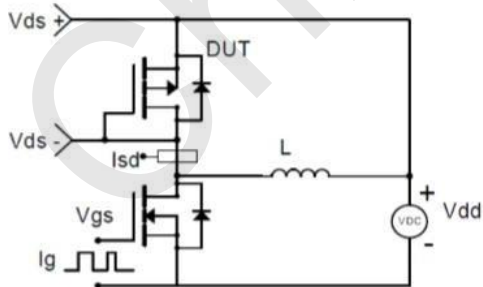
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

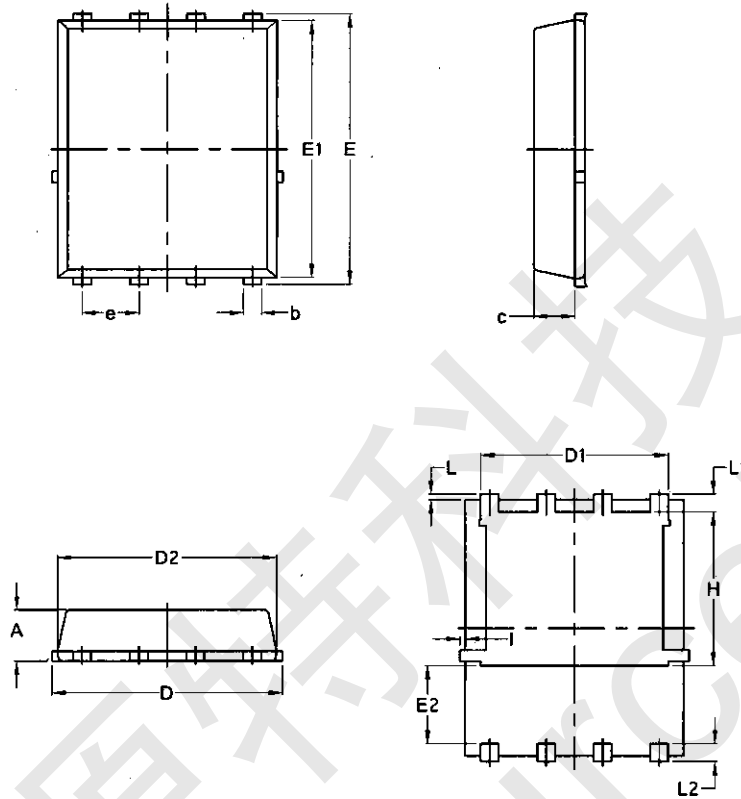


Diode Recovery Test Circuit & Waveforms





CST60P03F Package Mechanical Data-PDFN5060-8L-Single



Symbol	Common			
	mm		Inch	
	Min	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070