

RoHS Compliant Product
A suffix of "-C" specifies halogen free

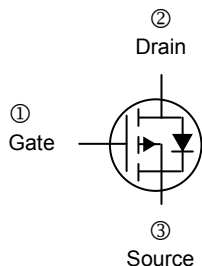
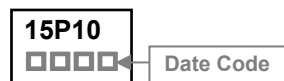
DESCRIPTION

The SSD15P10 is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications. The SSD15P10 meet the RoHS and Green Product with Function reliability approved.

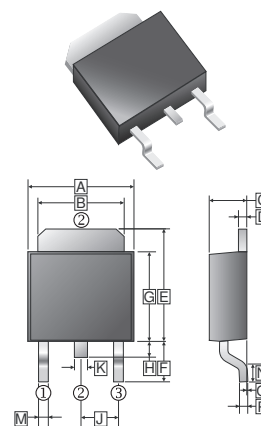
FEATURES

- $R_{DS(on)} \leq 90m\Omega @ V_{GS} = -10V$
- $R_{DS(on)} \leq 110m\Omega @ V_{GS} = -4.5V$
- Advanced high Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available
- TO-252 Package

MARKING



TO-252(D-Pack)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.90	J	2.336	REF.
B	4.95	5.53	K	0.89	REF.
C	2.10	2.50	M	0.45	1.14
D	0.665 Typ.		N	1.55 Typ.	
E	6.0	7.5	O	0	0.13
F	2.90 REF.		P	0.58 REF.	
G	5.40	6.40			
H	0.60	1.20			

PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ $V_{GS}=10V$ ¹	I_D	$T_C=25^\circ\text{C}$	-15 A
		$T_C=100^\circ\text{C}$	-10 A
Pulsed Drain Current ²	I_{DM}	-60	A
Power Dissipation ¹	P_D	50	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 175	$^\circ\text{C}$
Thermal Resistance Ratings			
Maximum Thermal Resistance Junction-Ambient ¹ (Max).	$R_{\theta JA}$	75	$^\circ\text{C} / \text{W}$
Maximum Thermal Resistance Junction-Ambient		132	
Maximum Thermal Resistance Junction-Case ¹ (Max).	$R_{\theta JC}$	3	

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

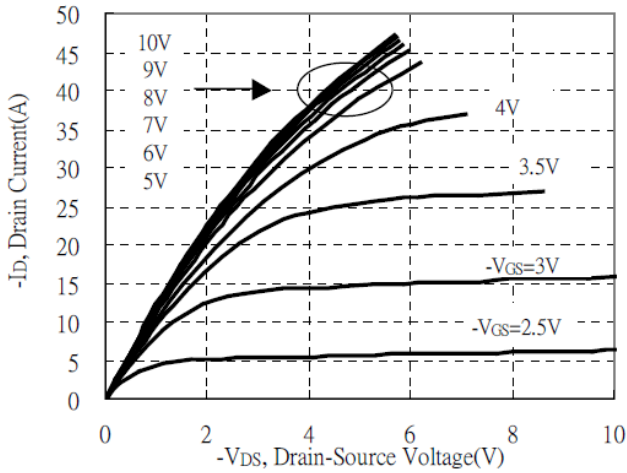
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-100	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$
Forward Transfer conductance	g_{fs}	-	11	-	S	$V_{DS} = -10\text{V}, I_D = -4\text{A}$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20\text{V}$
Drain-Source Leakage Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -80\text{V}, V_{GS}=0, T_J=25^\circ\text{C}$
		-	-	-25		$V_{DS} = -80\text{V}, V_{GS}=0, T_J=125^\circ\text{C}$
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	-	90	m Ω	$V_{GS} = -10\text{V}, I_D = -4.5\text{A}$
		-	-	110		$V_{GS} = -4.5\text{V}, I_D = -4\text{A}$
Total Gate Charge	Q_g	-	13.3	-	nC	$V_{GS} = -4.5\text{V}$
Total Gate Charge	Q_g	-	29.2	-		$I_D = -15\text{A}$
Gate-Source Charge	Q_{gs}	-	4	-		$V_{DS} = -80\text{V}$
Gate-Drain Change	Q_{gd}	-	8.5	-		$V_{GS} = -10\text{V}$
Turn-on Delay Time	$T_{d(on)}$	-	8.8	-	nS	$V_{DD} = -50\text{V}$ $I_D = -1\text{A}$ $V_{GS} = -10\text{V}$ $R_G = 6\Omega$
Rise Time	T_r	-	17.2	-		
Turn-off Delay Time	$T_{d(off)}$	-	86.2	-		
Fall Time	T_f	-	63	-		
Input Capacitance	C_{iss}	-	1726	-	pF	$V_{GS}=0$ $V_{DS} = -25\text{V}$ $f=1.0\text{MHz}$
Output Capacitance	C_{oss}	-	104	-		
Reverse Transfer Capacitance	C_{riss}	-	71	-		
Source-Drain Diode						
Diode Forward Voltage ¹	I_S	-	-	-15	A	
Continuous Source Current ²	I_{SM}	-	-	-60	A	
Forward On Voltage ³	V_{SD}	-	-	-1.2	V	$I_S = -2\text{A}, V_{GS}=0$
Reverse Recovery Time	T_{rr}	-	28.8	-	nS	$I_F = -15\text{A}, dI/dt=100\text{A}/\mu\text{s}$
Reverse Recovery Charge	Q_{rr}	-	40.9	-	nC	$T_J=25^\circ\text{C}$

Notes:

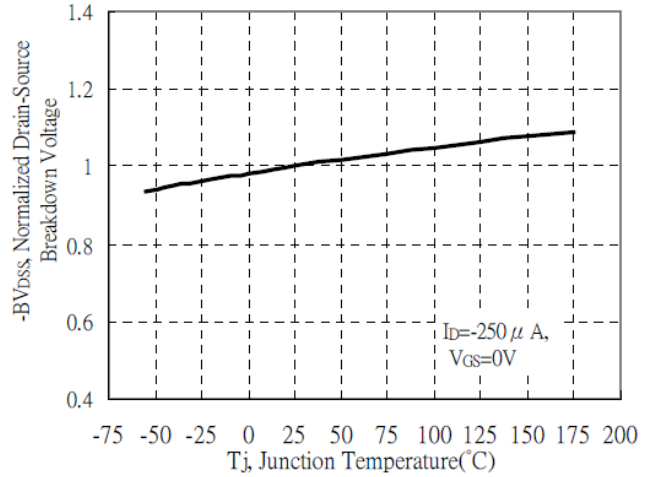
- The data tested by surface mounted on a 1 inch² FR-4 board with 2oz copper.
- The power dissipation is limited by 150°C junction temperature.
- The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS CURVE

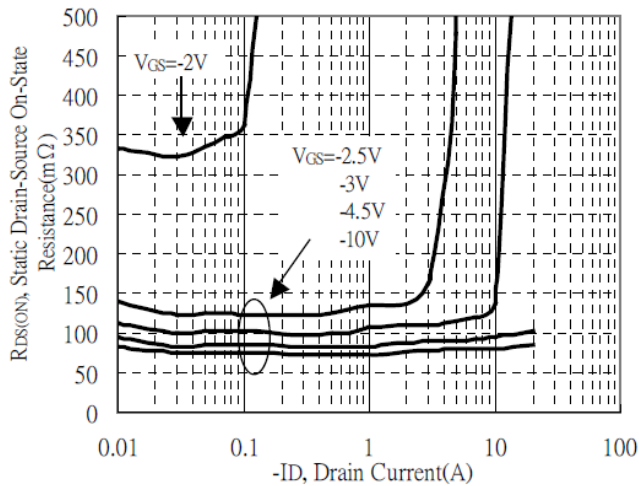
Typical Output Characteristics



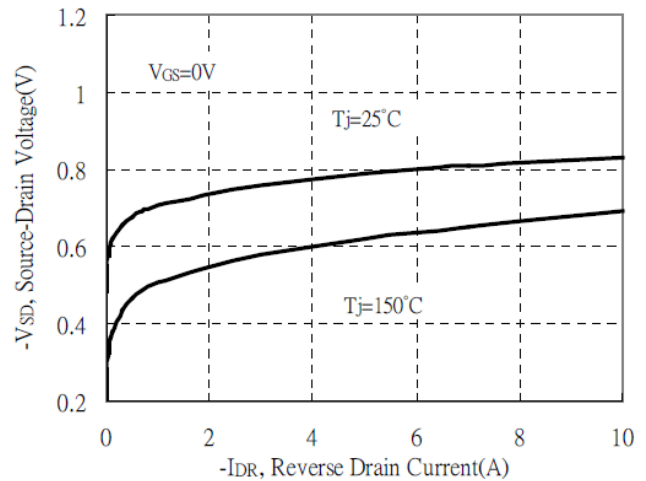
Breakdown Voltage vs Ambient Temperature



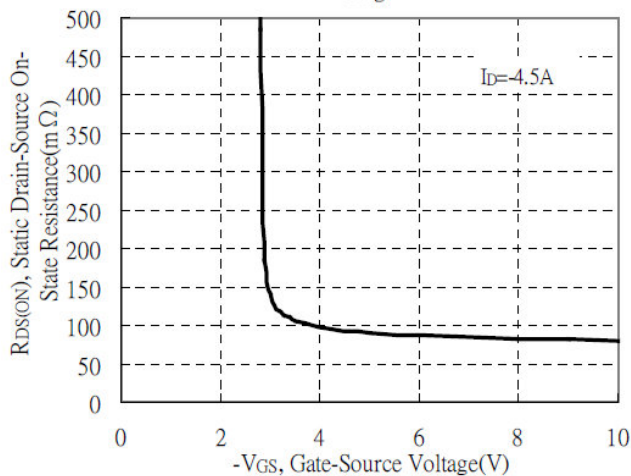
Static Drain-Source On-State resistance vs Drain Current



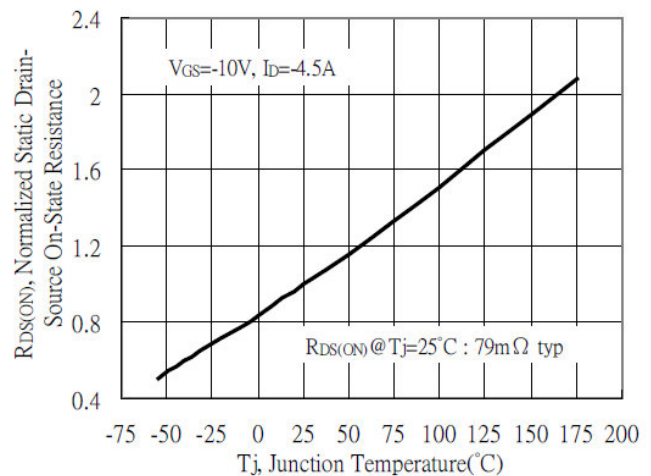
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

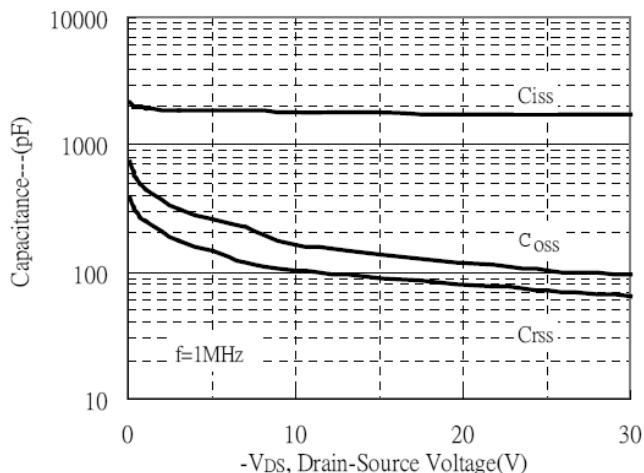


Drain-Source On-State Resistance vs Junction Temperature

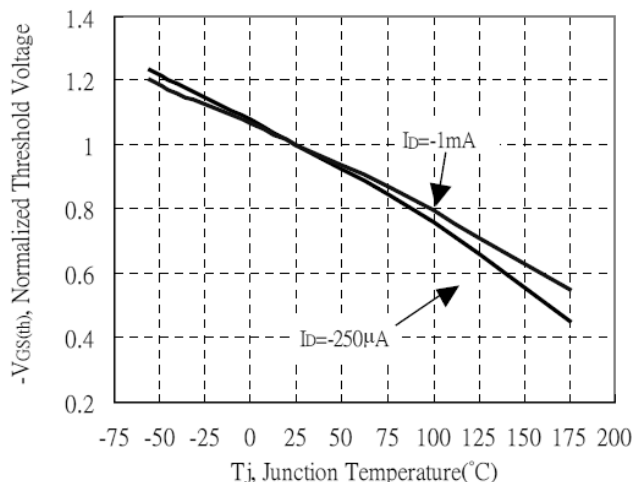


TYPICAL CHARACTERISTICS CURVE

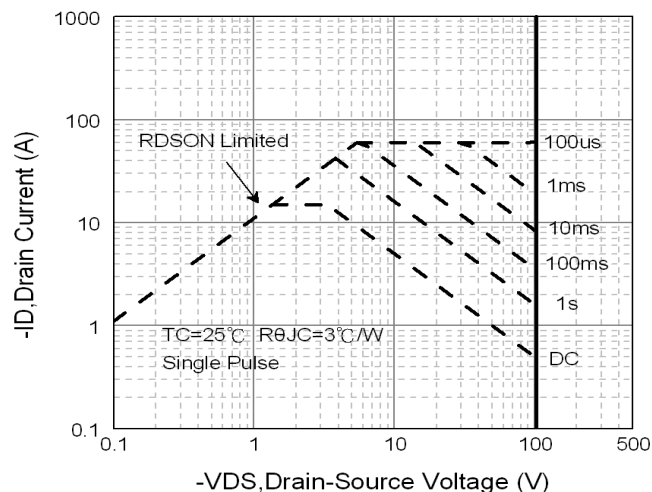
Capacitance vs Drain-to-Source Voltage



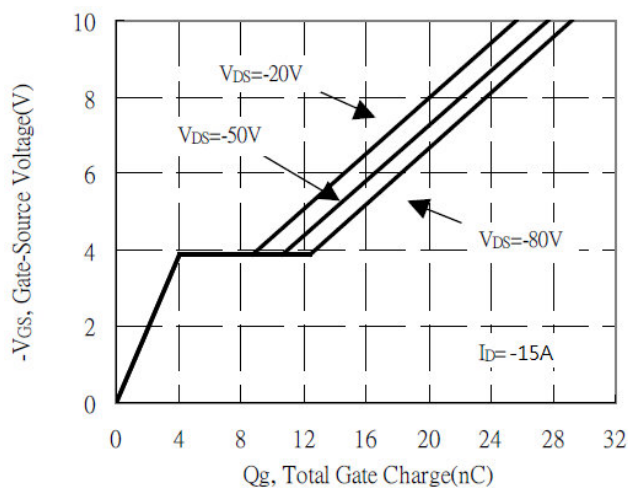
Threshold Voltage vs Junction Temperature



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves

