

RoHS Compliant Product
 A Suffix of "-C" specifies halogen & lead-free

DESCRIPTIONS

The SSI2007 is N and P Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent RDS (ON) with low gate charge. This device is suitable for use in DC-DC conversion, load switch and level shift.

MECHANICAL DATA

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage

APPLICATION

- DC-DC converter circuit
- Load Switch

DEVICE MARKING:



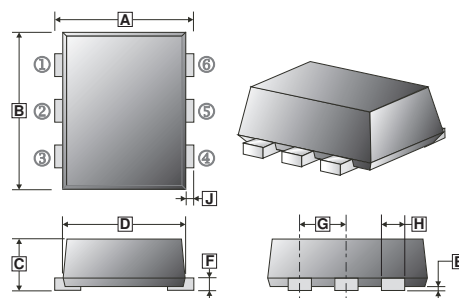
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-563	3K	7' inch

MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

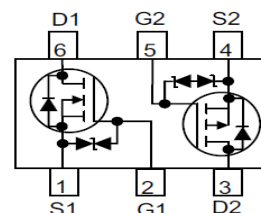
Parameter	Symbol	Part Number				Unit	
		N-Channel		P-Channel			
		10S	Steady State	10S	Steady State		
Drain – Source Voltage	V _{DS}	20		-20		V	
Gate – Source Voltage	V _{GS}	±6				V	
Continuous Drain Current ¹	T _A = 25°C	I _D	0.88	0.8	-0.64	-0.56	A
	T _A = 70°C	I _D	0.71	0.64	-0.51	-0.45	
Power Dissipation ¹	T _A = 25°C	P _D	0.37	0.3	0.37	0.29	W
	T _A = 70°C	P _D	0.23	0.19	0.23	0.18	
Continuous Drain Current ²	T _A = 25°C	I _D	0.76	0.69	-0.54	-0.5	A
	T _A = 70°C	I _D	0.6	0.55	-0.43	-0.4	
Power Dissipation ²	T _A = 25°C	P _D	0.27	0.22	0.27	0.22	W
	T _A = 70°C	P _D	0.17	0.14	0.17	0.14	
Pulsed Drain Current ³	I _{DM}	1.4		-1		A	
Maximum Junction-to-Lead	R _{θJL}	260				°C / W	
Operating Junction & Storage Temperature Range	T _J , T _{STG}	150, -55~150				°C	

SOT-563



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.50	1.70	F	0.09	0.16
B	1.50	1.70	G	0.45	0.55
C	0.525	0.60	H	0.17	0.27
D	1.10	1.30	J	0.10	0.30
E	-	0.05			

Top View



THERMAL RESISTANCE RATINGS

Parameter	Symbol	Part Number				Unit	
		N-Channel		P-Channel			
		Typ.	Max.	Typ.	Max.		
Junction-to-Ambient Thermal Resistance ¹	$T \leq 10S$	$R_{\theta JA}$	285	335	290	335	°C / W
	Steady State		340	405	350	430	
Junction-to-Ambient Thermal Resistance ²	$T \leq 10S$	$R_{\theta JA}$	385	450	385	460	
	Steady State		455	545	465	555	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	260	300	280	320	

Note:

1. Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper.
2. Surface mounted on FR4 board using minimum pad size, 1oz copper
3. Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu s$, Duty Cycle=1%
4. Repetitive rating, pulse width limited by junction temperature $T_J=150^\circ C$.

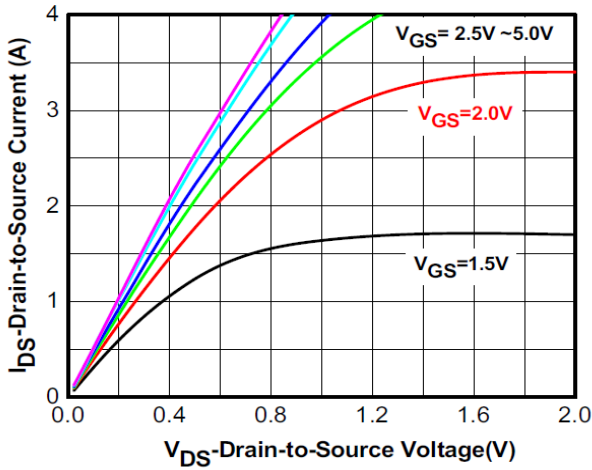
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions	
Static							
Drain-Source Breakdown Voltage	N-Ch	$V_{(BR)DSS}$	20	-	-	V	$V_{GS}=0, I_D=250\mu A$
	P-Ch		-20	-	-		$V_{GS}=0, I_D=-250\mu A$
Zero Gate Voltage Drain Current	N-Ch	I_{DSS}	-	-	100	nA	$V_{DS}=20V, V_{GS}=0$
	P-Ch		-	-	-100		$V_{DS}= -20V, V_{GS}=0$
Gate-Source Leakage	N-Ch	I_{GSS}	-	-	± 5	μA	$V_{DS}=0, V_{GS}= \pm 5V$
	P-Ch		-	-	± 5		
Gate-Threshold Voltage	N-Ch	$V_{GS(TH)}$	0.45	0.58	0.85	V	$V_{DS}=V_{GS}, I_D=250\mu A$
	P-Ch		-0.45	-0.55	-0.8		$V_{DS}=V_{GS}, I_D= -250\mu A$
Drain-Source On Resistance	N-Ch	$R_{DS(ON)}$	-	220	260	mΩ	$V_{GS}=4.5V, I_D=0.55A$
	P-Ch		-	600	800		$V_{GS}= -4.5V, I_D= -0.45A$
	N-Ch		-	260	310		$V_{GS}=2.5V, I_D=0.45A$
	P-Ch		-	780	1000		$V_{GS}= -2.5V, I_D= -0.35A$
	N-Ch		-	320	380		$V_{GS}=1.8V, I_D=0.35A$
	P-Ch		-	960	1250		$V_{GS}= -1.8V, I_D= -0.25A$
Forward Transconductance	N-Ch	g_{FS}	-	2	-	S	$V_{DS}=5V, I_D= 0.55A$
	P-Ch		-	1.25	-		$V_{DS}= -5V, I_D= -0.45A$
Body-Drain Diode Ratings							
Diode Forward On-Voltage	N-Ch	V_{SD}	0.5	0.7	1.1	V	$I_S=150mA, V_{GS}=0$
	P-Ch		-0.5	-0.65	-1.1		$I_S= -150mA, V_{GS}=0$

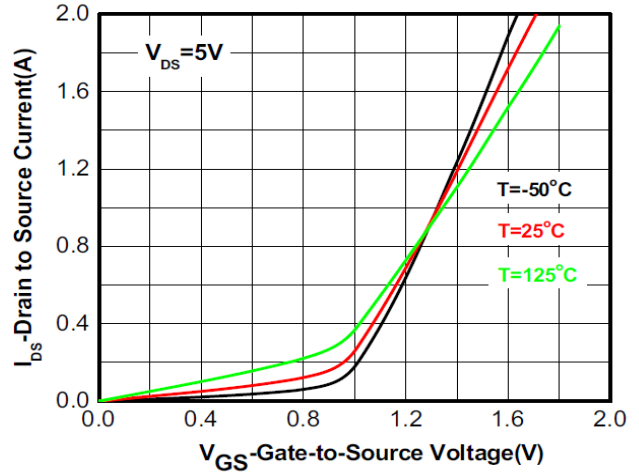
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Teat Conditions		
Dynamic Characteristics									
Input Capacitance	N-Ch	C_{ISS}	-	50	-	pF	N-Ch: $V_{DS}=10\text{V}$, $V_{GS}=0$, $f=1\text{MHz}$		
	P-Ch		-	74.5	-				
Output Capacitance	N-Ch	C_{OSS}	-	13	-				
	P-Ch		-	10.8	-				
Reverse Transfer Capacitance	N-Ch	C_{RSS}	-	8	-			nC	P-Ch: $V_{DS}= -10\text{V}$, $V_{GS}=0$, $f=100\text{KHz}$
	P-Ch		-	10.2	-				
Total Gate Charge	N-Ch	$Q_{G(TOT)}$	-	1.15	-				
	P-Ch		-	1.1	-				
Threshold Gate Charge	N-Ch	$Q_{G(TH)}$	-	0.06	-	N-Ch: $V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=0.6\text{A}$			
	P-Ch		-	0.08	-				
Gate-to-Source Charge	N-Ch	Q_{GS}	-	0.15	-		P-Ch: $V_{DS}= -10\text{V}$, $V_{GS}= -4.5\text{V}$, $I_D= -0.6\text{A}$		
	P-Ch		-	0.44	-				
Gate-to-Drain Charge	N-Ch	Q_{GD}	-	0.23	-				
	P-Ch		-	0.18	-				
Turn-on Delay Time	N-Ch	$T_{d(ON)}$	-	22	-	nS		N-Ch: $V_{DD}=10\text{V}$, $I_D=0.5\text{A}$, $V_{GEN}=4.5\text{V}$, $R_L=10\Omega$, $R_G=6\Omega$.	
	P-Ch		-	45	-				
Rise Time	N-Ch	T_r	-	80	-				
	P-Ch		-	140	-				
Turn-off Delay Time	N-Ch	$T_{d(OFF)}$	-	700	-		P-Ch: $V_{DD}= -10\text{V}$, $I_D= -0.5\text{A}$, $V_{GEN}= -4.5\text{V}$, $R_L=10\Omega$, $R_G=6\Omega$.		
	P-Ch		-	1500	-				
Fall Time	N-Ch	T_f	-	380	-				
	P-Ch		-	2100	-				

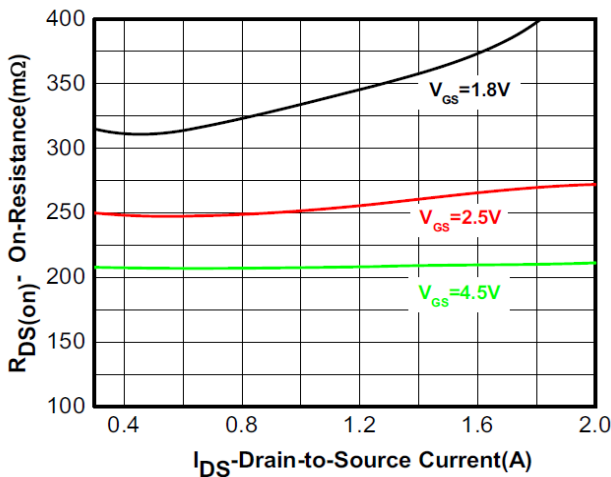
CHARACTERISTIC CURVES (N-Channel)



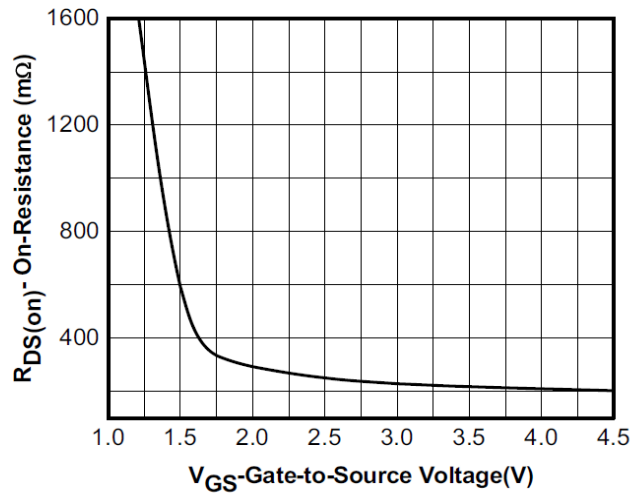
Output characteristics



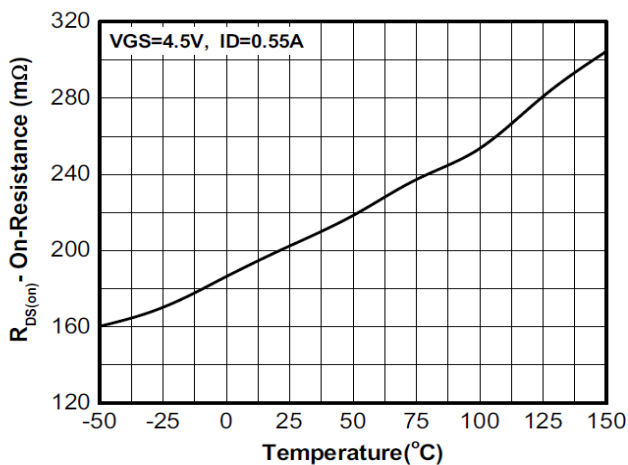
Transfer characteristics



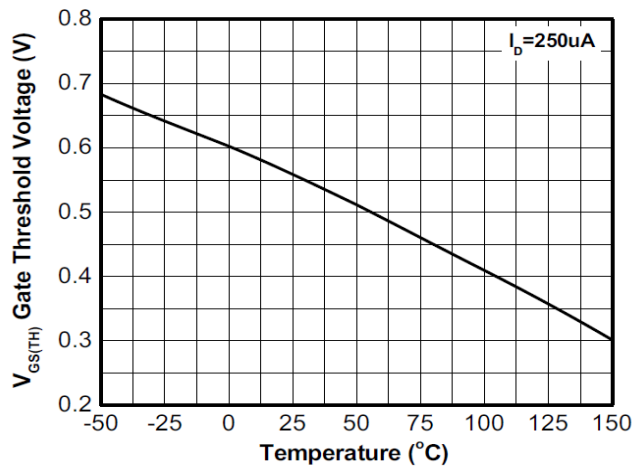
On-Resistance vs. Drain current



On-Resistance vs. Gate-to-Source voltage

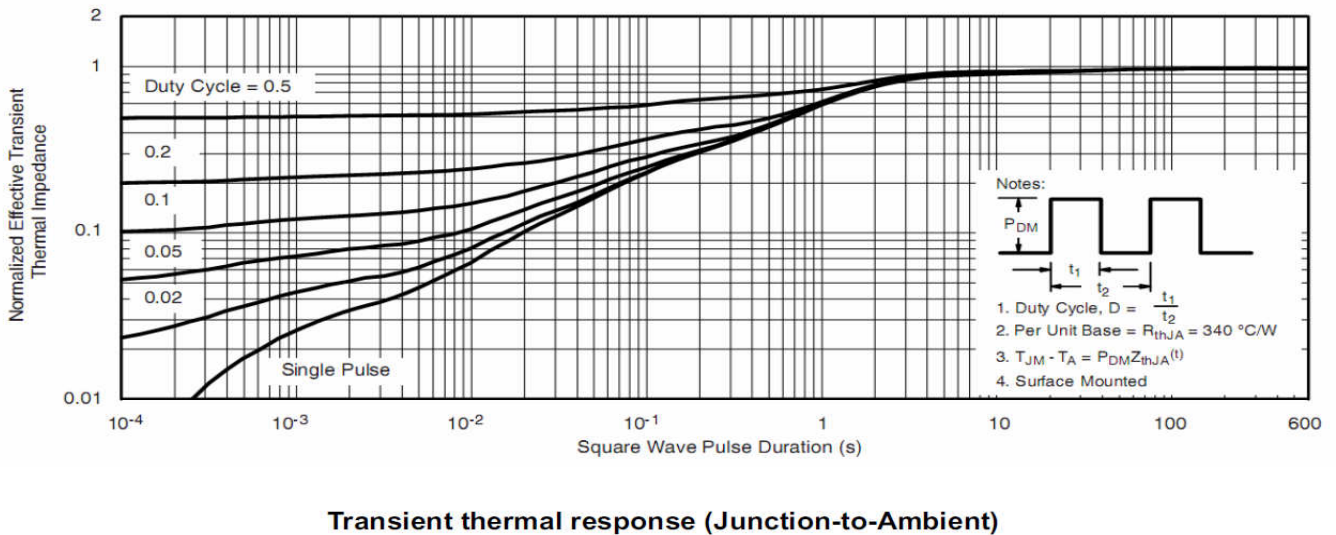
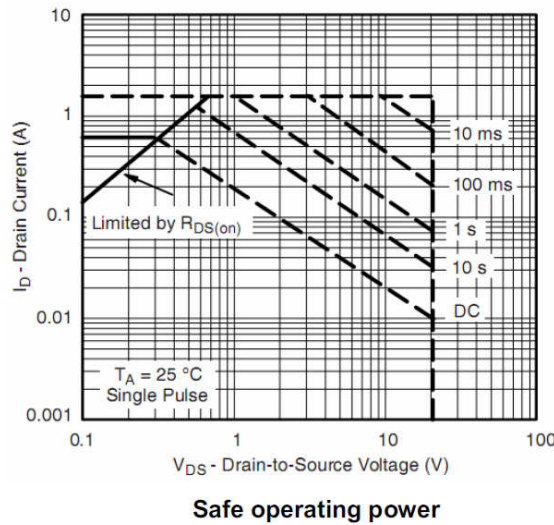
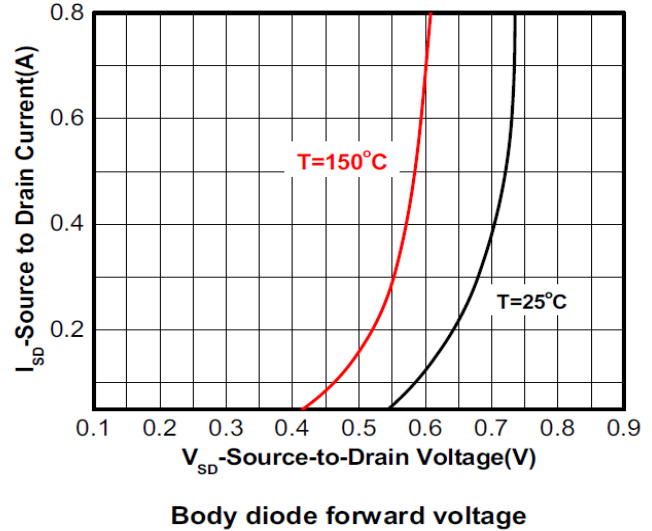
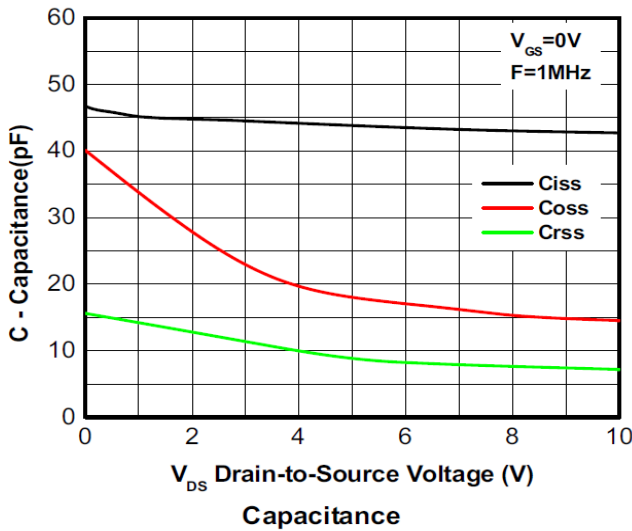


On-Resistance vs. Junction temperature

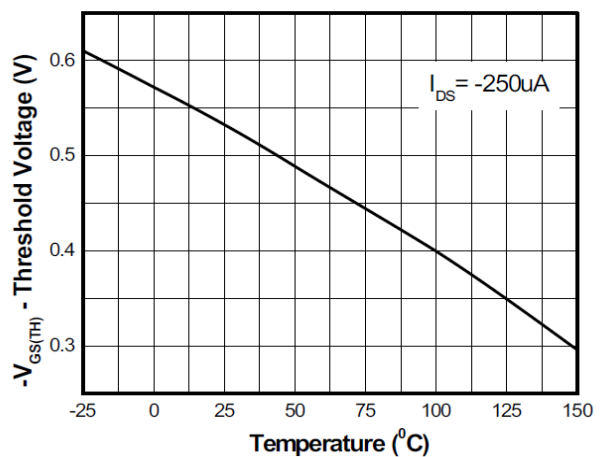
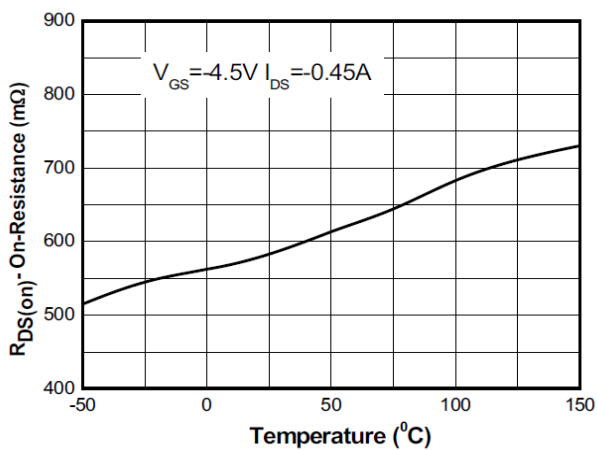
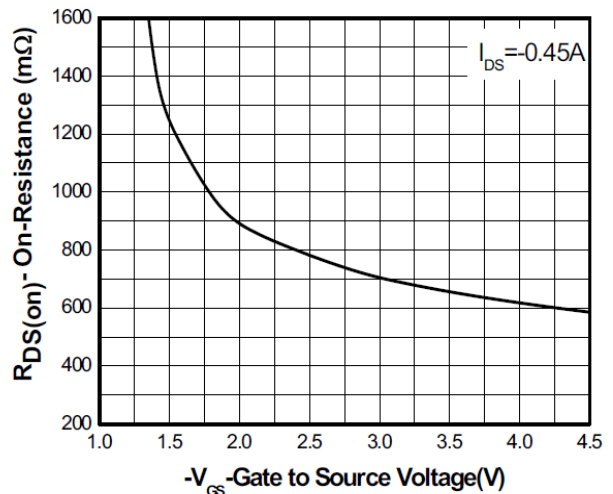
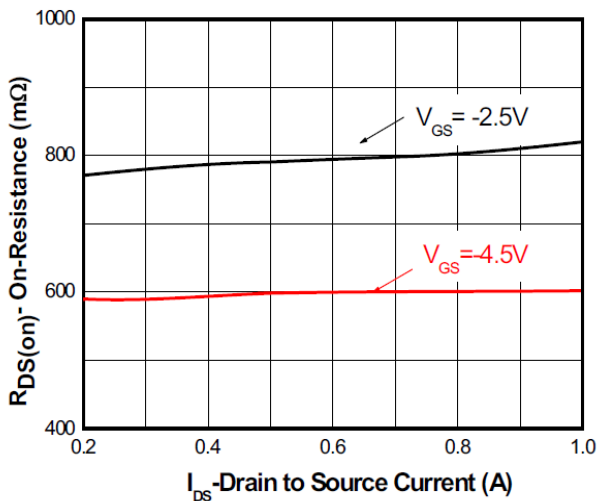
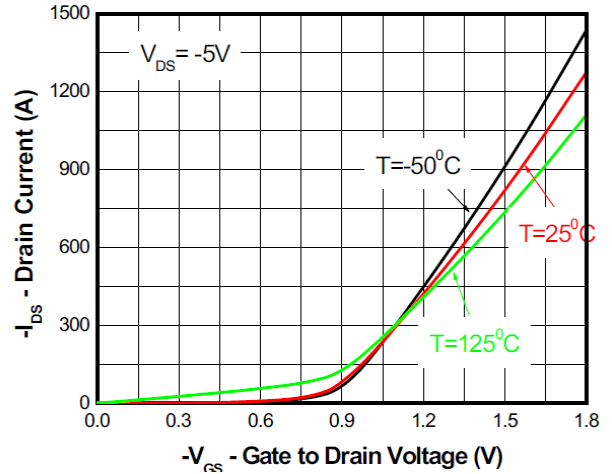
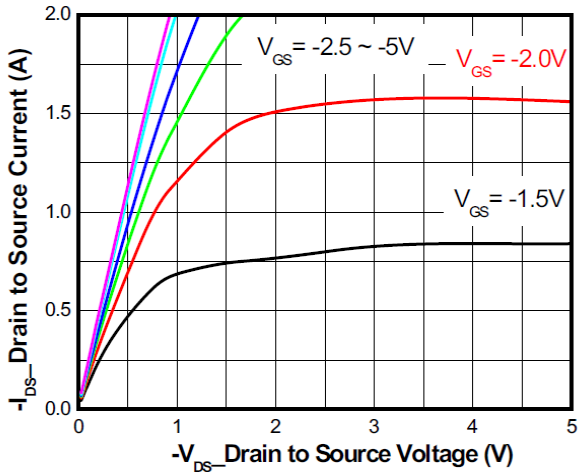


Threshold voltage vs. Temperature

CHARACTERISTIC CURVES (N-Channel)



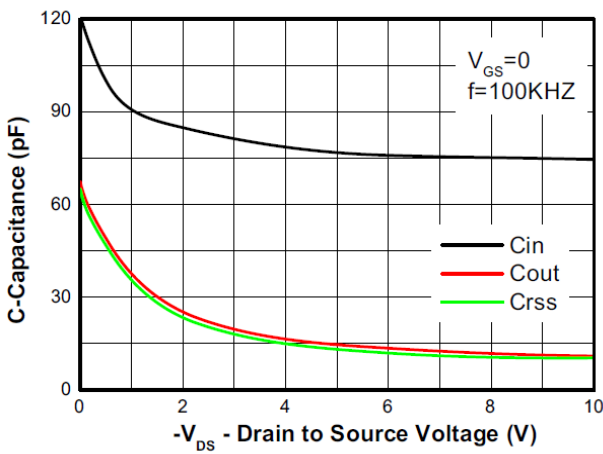
CHARACTERISTIC CURVES(P-Channel)



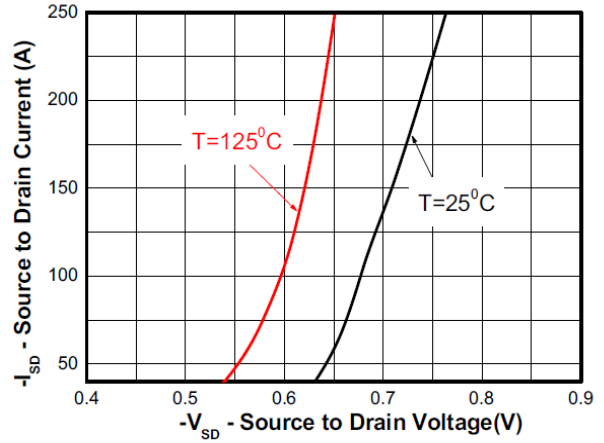
On-Resistance vs. Junction temperature

Threshold voltage vs. Temperature

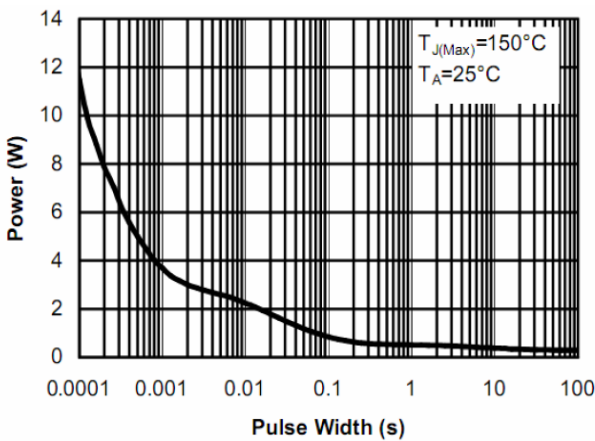
CHARACTERISTIC CURVES(P-Channel)



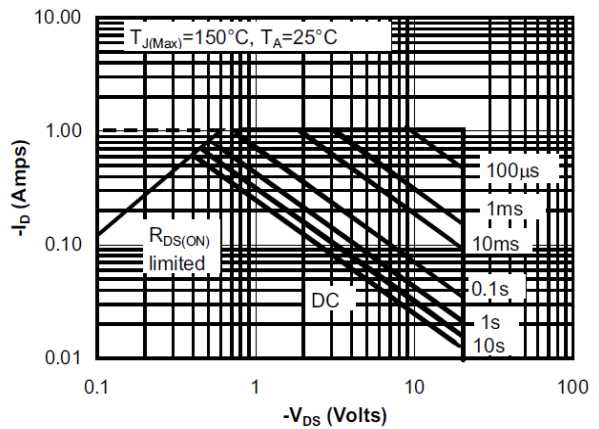
Capacitance



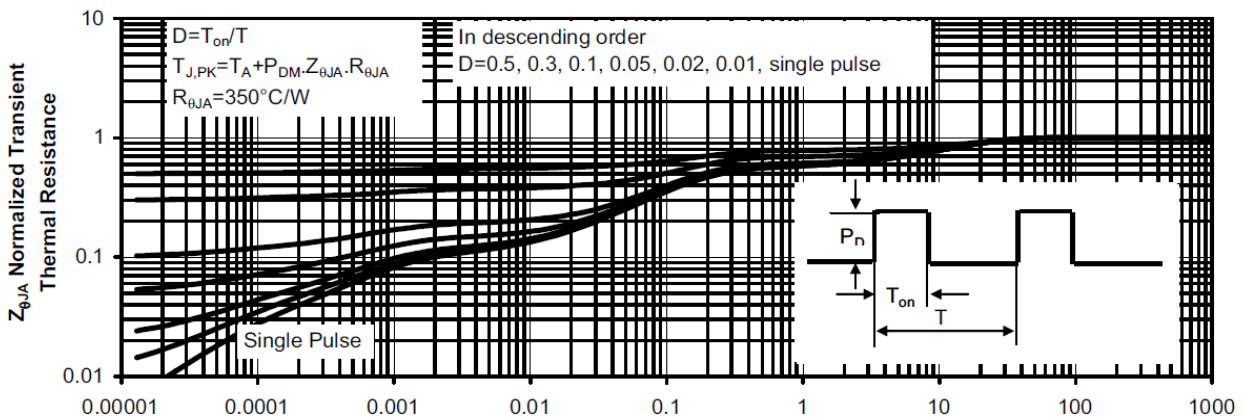
Body diode forward voltage



Single pulse power



Safe operating power



Transient thermal response (Junction-to-Ambient)