

SSG4510-C

N-Ch: 3.5A, 100V, $R_{DS(ON)}$ 112m Ω
P-Ch: -2.5A, -100 V, $R_{DS(ON)}$ 200m Ω
N & P-Ch Enhancement Mode Power MOSFET

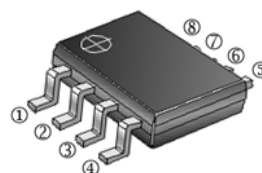
RoHS Compliant Product
 A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSG4510-C provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

SOP-8



FEATURES

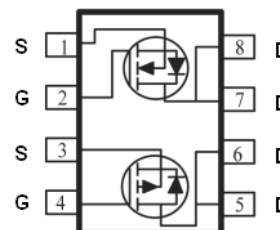
- Simple Drive Requirement
- Lower On-Resistance
- Fast Switching Performance

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch



ORDER INFORMATION

Part Number	Type
SSG4510-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings		Unit
		N-Ch	P-Ch	
Drain-Source Voltage	V_{DS}	100	-100	V
Gate-Source Voltage	V_{GS}	± 20	± 20	
Continuous Drain Current, @ $V_{GS}=10V$ ¹	$T_A=25^\circ C$	3.5	-2.5	A
	$T_A=70^\circ C$	2.8	-2	
Pulsed Drain Current ²	I_{DM}	14	-10	A
Total Power Dissipation	$T_A=25^\circ C$	2		W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150		$^\circ C$
Thermal Data				
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	$\leq 10sec, 62.5$		$^\circ C/W$
		Steady State, 105		
Thermal Resistance Junction-Ambient		135		
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	50		

N-CHANNEL 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	$V_{GS(th)}$	1.0	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Forward Transfer conductance	g_{fs}	-	8	-	S	$V_{DS}=5\text{V}, I_D=2.4\text{A}$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20\text{V}$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=80\text{V}, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	5		
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	-	112	m Ω	$V_{GS}=10\text{V}, I_D=2\text{A}$	
		-	-	120		$V_{GS}=4.5\text{V}, I_D=1\text{A}$	
Total Gate Charge	Q_g	-	24.8	-	nC	$I_D=2\text{A}$ $V_{DS}=80\text{V}$ $V_{GS}=10\text{V}$	
Gate-Source Charge	Q_{gs}	-	4.4	-			
Gate-Drain ("Miller") Change	Q_{gd}	-	3.7	-			
Turn-on Delay Time	$T_{d(on)}$	-	7.9	-	nS	$V_{DS}=50\text{V}$ $V_{GS}=10\text{V}$ $I_D=2\text{A}$ $R_G=3.3\Omega$	
Rise Time	T_r	-	3.2	-			
Turn-off Delay Time	$T_{d(off)}$	-	25.3	-			
Fall Time	T_f	-	14.3	-			
Input Capacitance	C_{iss}	-	1436	-	pF	$V_{GS}=0$ $V_{DS}=20\text{V}$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	51	-			
Reverse Transfer Capacitance	C_{rss}	-	44	-			
Source-Drain Diode							
Forward On Voltage ³	V_{SD}	-	-	1.2	V	$I_S=2.4\text{A}, V_{GS}=0$	
Continuous Source Current(Body Diode) ¹	I_S	-	-	3.5	A		
Pulsed Source Current(Body Diode) ²	I_{SM}	-	-	14	A		

Notes:

1. Surface mounted on 1 inch² copper pad of FR-4 board.
2. Pulse width limited by Max. Junction temperature.
3. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

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

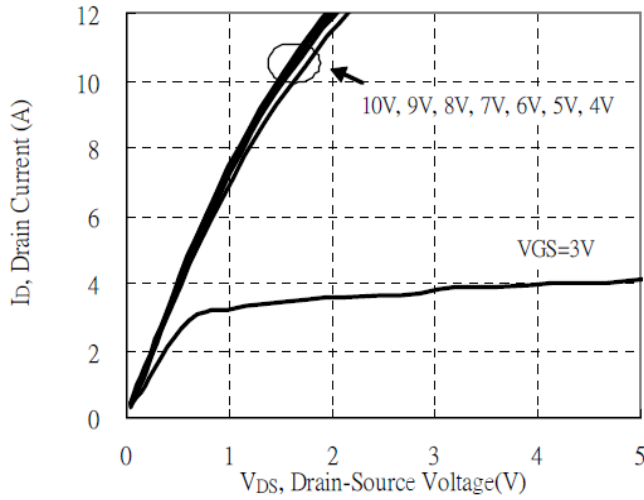
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	-100	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$	
Gate Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$	
Forward Transfer conductance	g_{fs}	-	5	-	S	$V_{DS} = -5V, I_D = -1.5A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	-1	μA	$V_{DS} = -80V, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	-5		
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	-	200	m Ω	$V_{GS} = -10V, I_D = -2A$	
		-	-	220		$V_{GS} = -4.5V, I_D = -1A$	
Total Gate Charge	Q_g	-	21.8	-	nC	$I_D = -2.2A$ $V_{DS} = -80V$ $V_{GS} = -10V$	
Gate-Source Charge	Q_{gs}	-	4.7	-			
Gate-Drain ("Miller") Change	Q_{gd}	-	3.9	-			
Turn-on Delay Time	$T_{d(on)}$	-	6.8	-	nS	$V_{DS} = -50V$ $V_{GS} = -10V$ $I_D = -1A$ $R_G = 6\Omega$	
Rise Time	T_r	-	30	-			
Turn-off Delay Time	$T_{d(off)}$	-	72.4	-			
Fall Time	T_f	-	4.35	-			
Input Capacitance	C_{iss}	-	1314	-	pF	$V_{GS}=0$ $V_{DS} = -20V$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	59	-			
Reverse Transfer Capacitance	C_{rss}	-	40	-			
Source-Drain Diode							
Forward On Voltage ³	V_{SD}	-	-	-1.2	V	$I_S = -2.2A, V_{GS}=0V$	
Continuous Source Current(Body Diode) ¹	I_S	-	-	-2.5	A		
Pulsed Source Current(Body Diode) ²	I_{SM}	-	-	-10	A		

Notes:

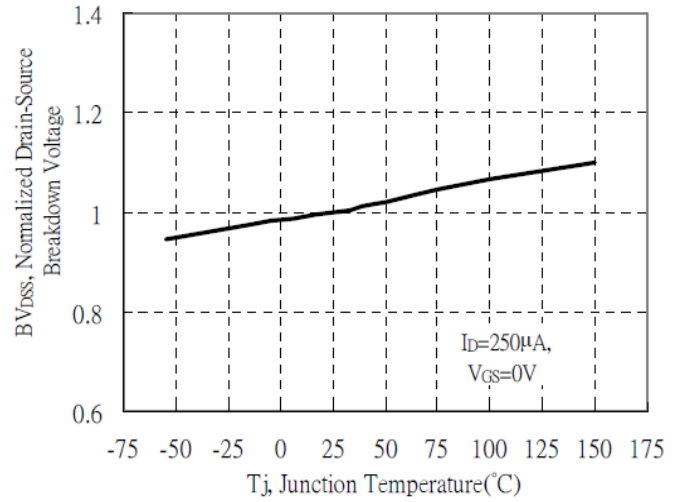
- Surface mounted on 1 inch² copper pad of FR-4 board.
- Pulse width limited by Max. Junction temperature.
- Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

N-CHANNEL CHARACTERISTIC CURVE

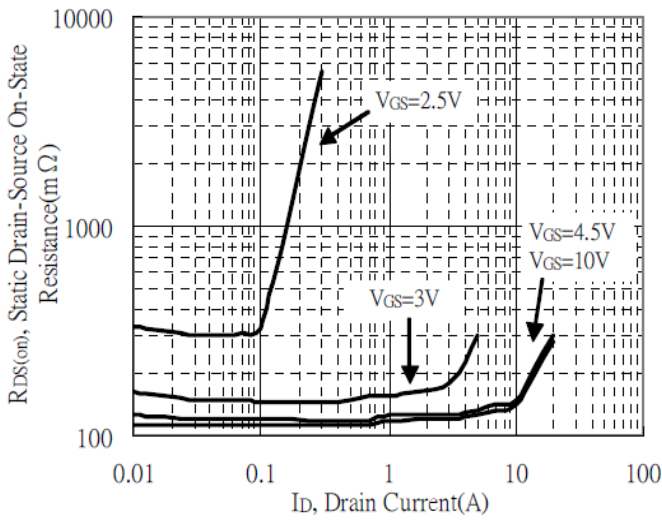
Typical Output Characteristics



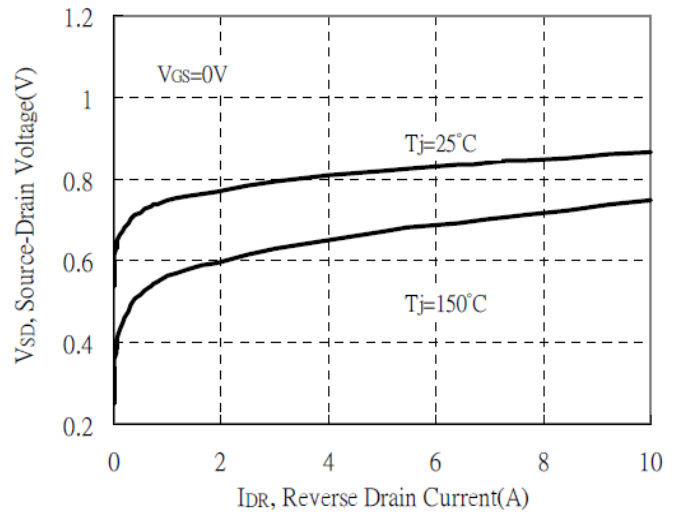
Breakdown Voltage vs Ambient Temperature



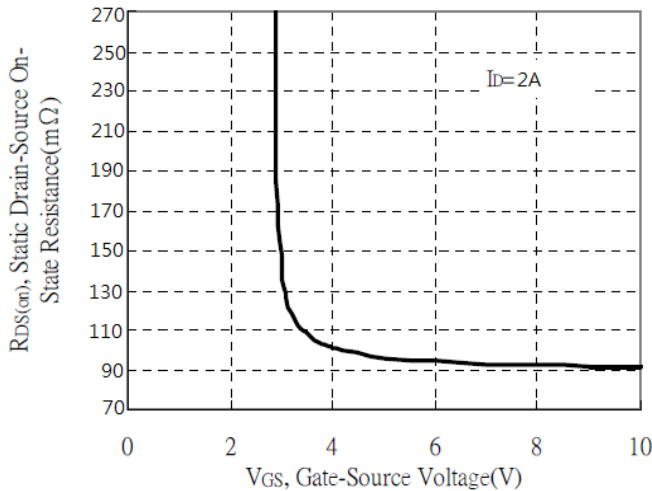
Static Drain-Source On-State resistance vs Drain Current



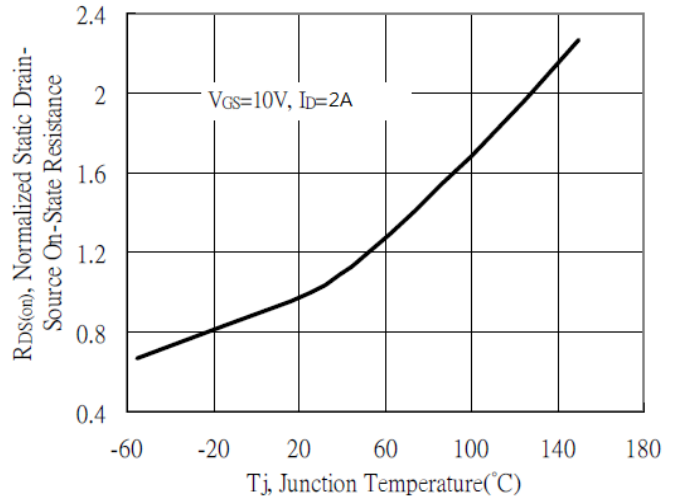
Reverse Drain Current vs Source-Drain Voltage



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

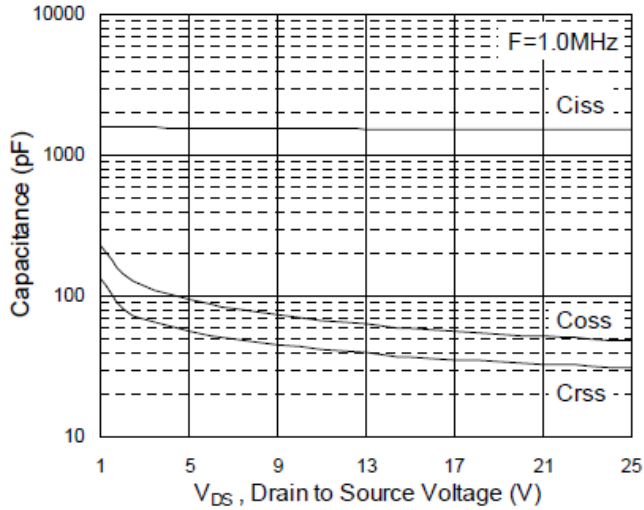


Drain-Source On-State Resistance vs Junction Temperature

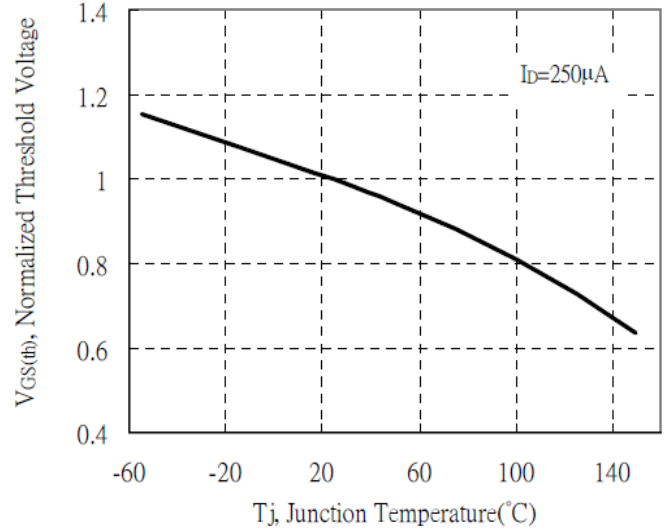


N-CHANNEL CHARACTERISTIC CURVE

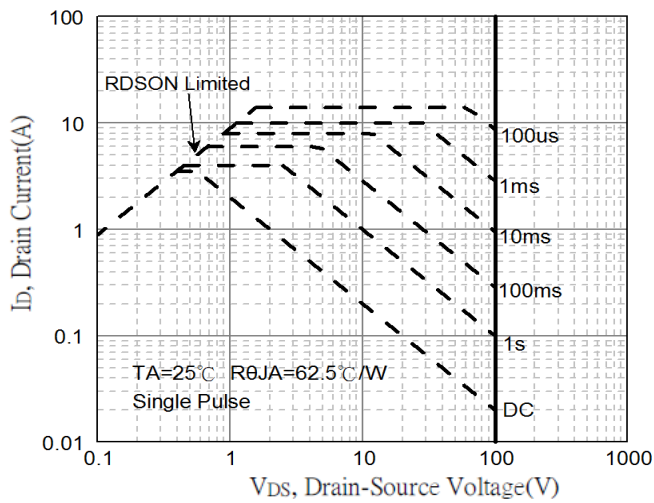
Capacitance vs Drain-to-Source Voltage



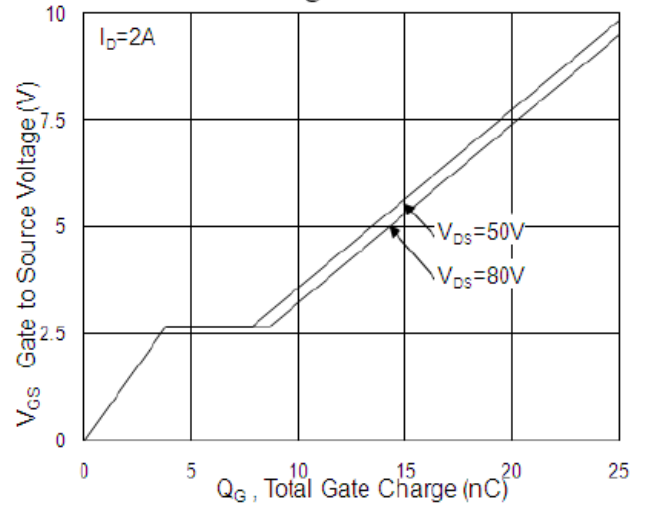
Threshold Voltage vs Junction Temperature



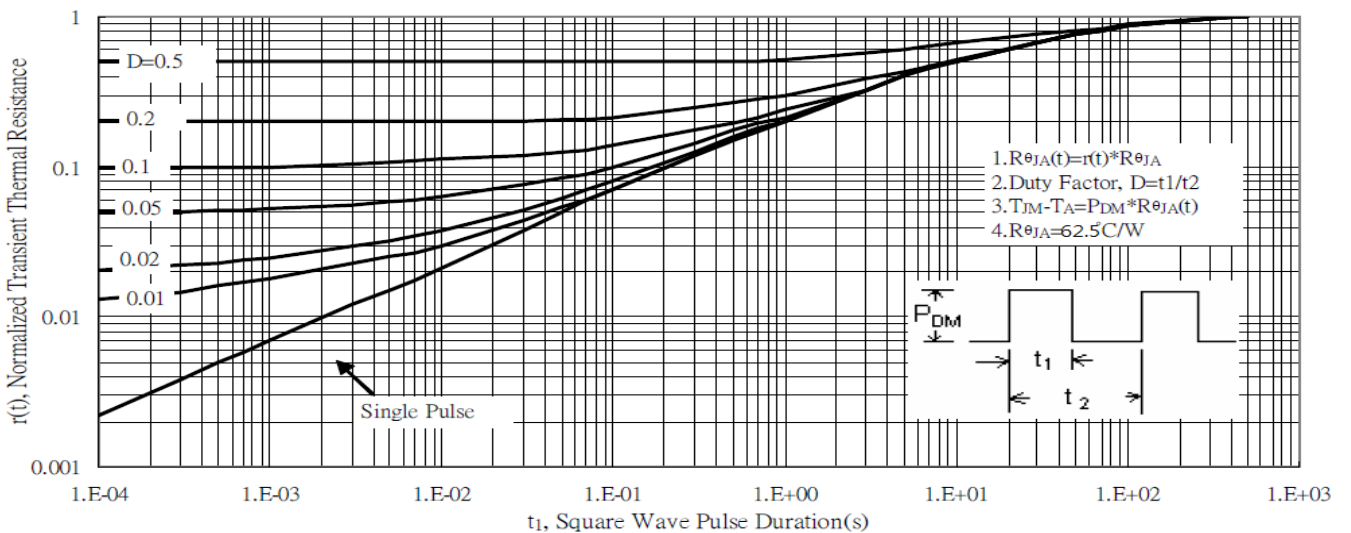
Maximum Safe Operating Area



Gate Charge Characteristics

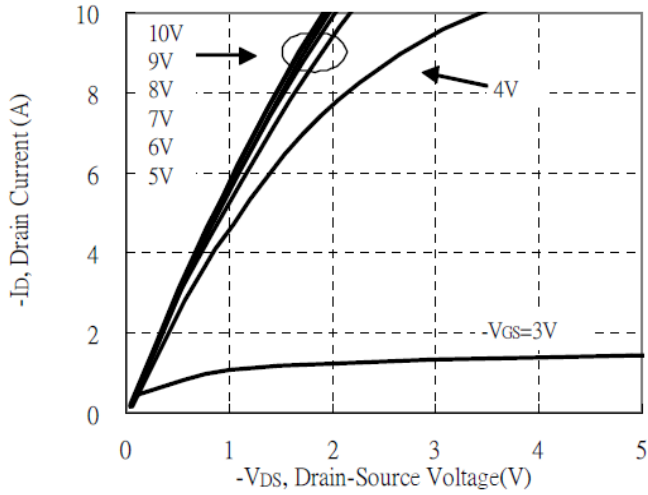


Transient Thermal Response Curves

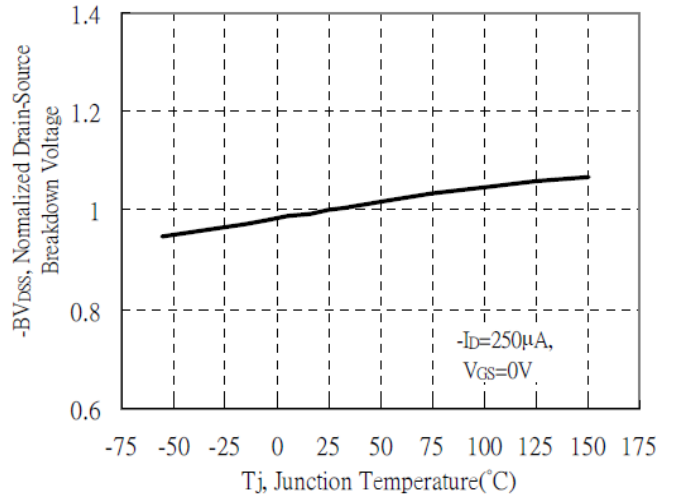


P-CHANNEL CHARACTERISTIC CURVE

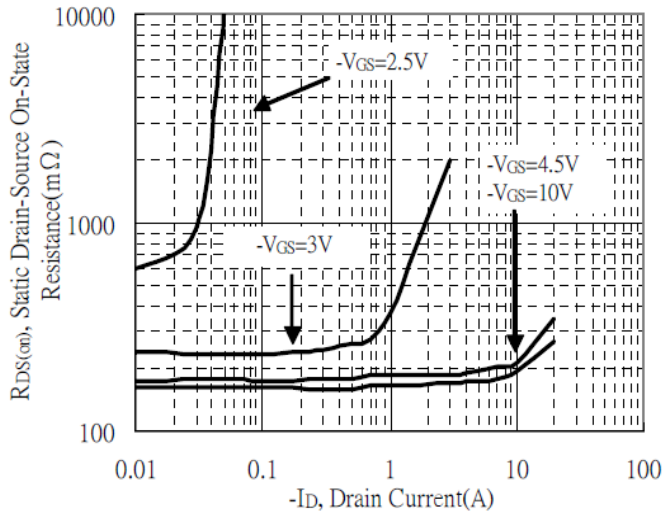
Typical Output Characteristics



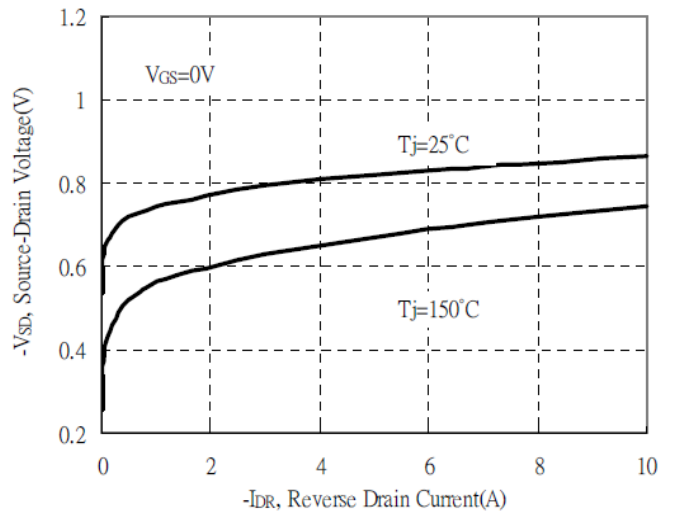
Breakdown Voltage vs Ambient Temperature



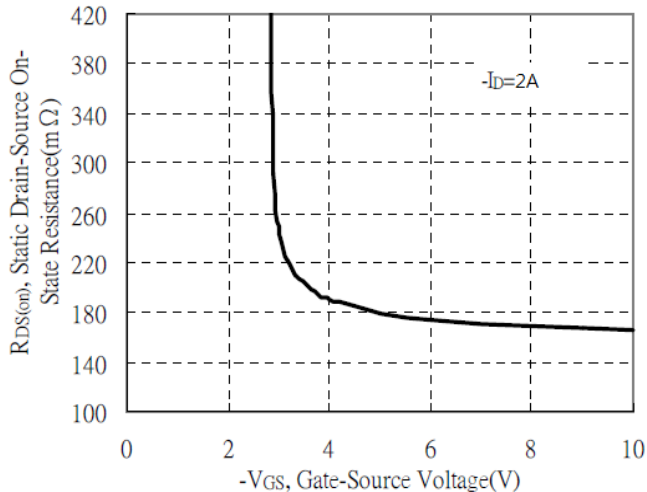
Static Drain-Source On-State resistance vs Drain Current



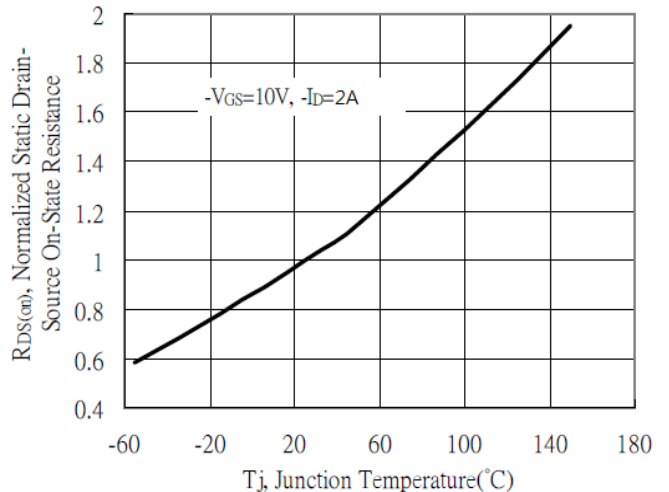
Reverse Drain Current vs Source-Drain Voltage



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

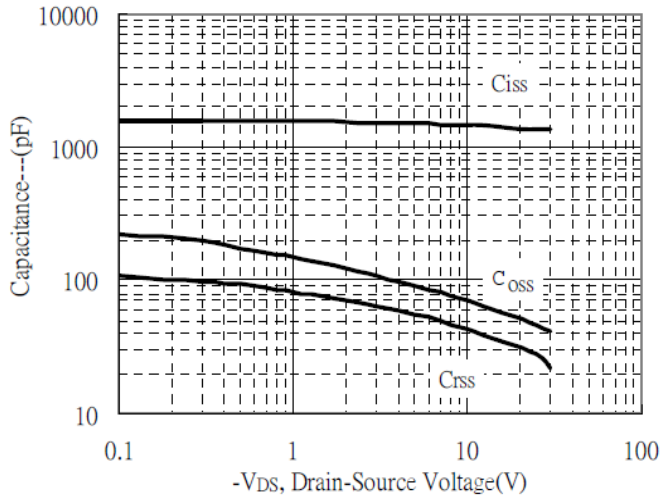


Drain-Source On-State Resistance vs Junction Temperature

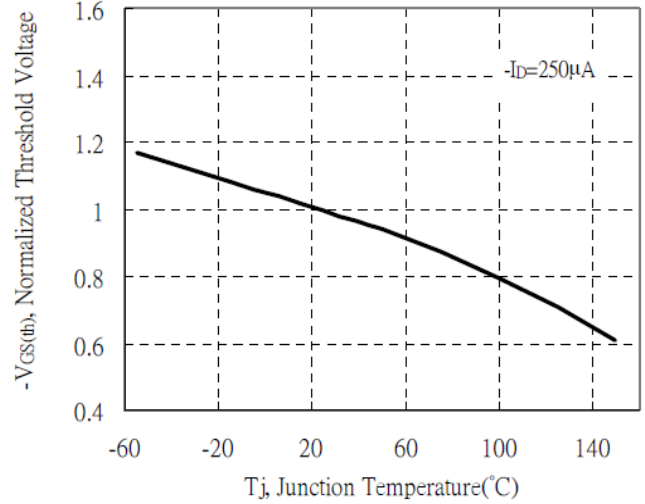


P-CHANNEL CHARACTERISTIC CURVE

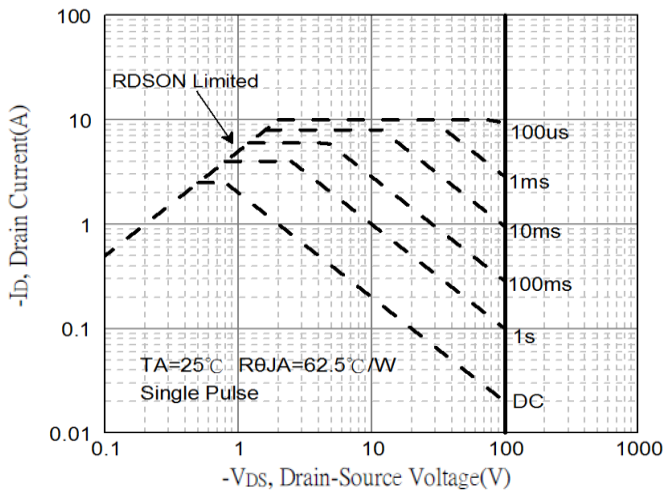
Capacitance vs Drain-to-Source Voltage



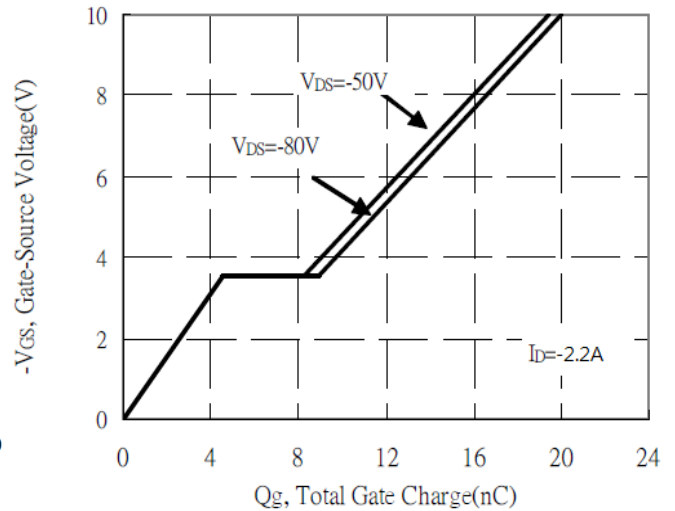
Threshold Voltage vs Junction Temperature



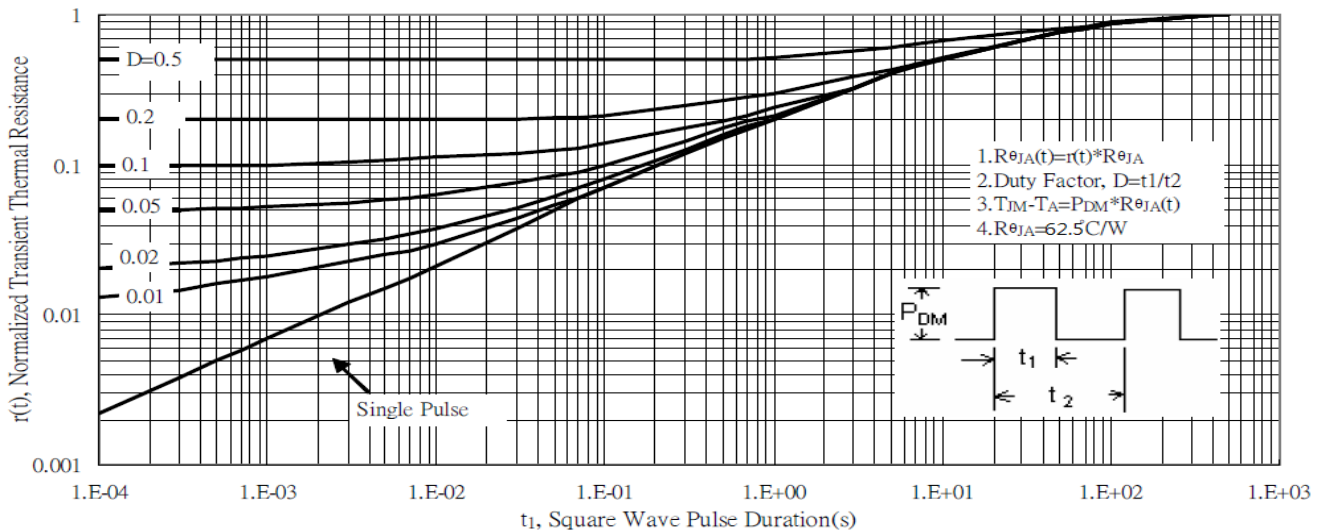
Maximum Safe Operating Area



Gate Charge Characteristics

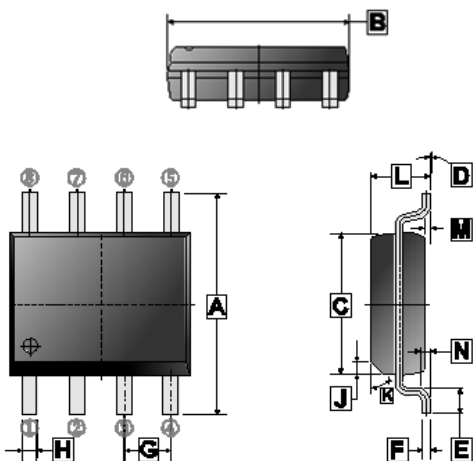


Transient Thermal Response Curves



PACKAGE OUTLINE DIMENSIONS

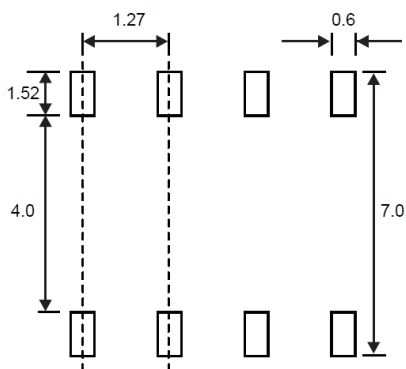
SOP-8



REF.	Millimeter	
	Min.	Max.
A	5.79	6.20
B	4.70	5.11
C	3.80	4.00
D	0°	8°
E	0.40	1.27
F	0.10	0.25
G	1.27 TYP.	
H	0.33	0.51
J	0.375 REF.	
K	45° REF.	
L	1.30	1.752
M	0	0.25
N	0.25 REF.	

MOUNTING PAD LAYOUT

SOP-8



*Dimensions in millimeters