Elektronische Bauelemente

SSI2085E-C

N-Ch: 0.56A, 20V, $R_{DS(ON)}$ 450mΩ
P-Ch: -0.5A, -20V, $R_{DS(ON)}$ 900mΩ
N & P-Ch Enhancement Mode Power MOSFET

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

DESCRIPTIONS

The SSI2085E-C is the highest performance trench N-Ch and 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 SSI2085E-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

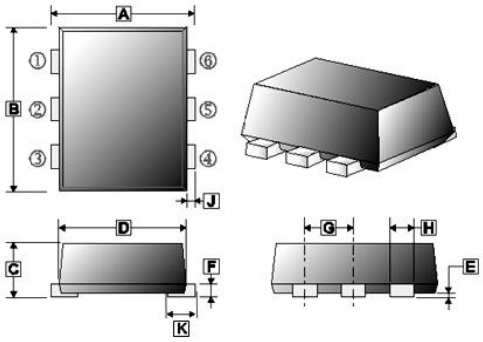
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-563	3K	7 inch

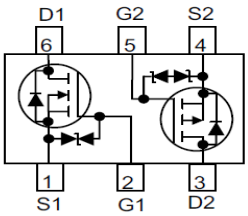
ORDER INFORMATION

Part Number	Type
SSI2085E-C	Lead (Pb)-free and Halogen-free

SOT-563

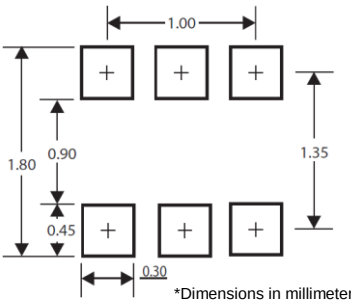


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.50	1.70	F	0.09	0.16
B	1.50	1.70	G	0.45	0.55
C	0.525	0.60	H	0.17	0.27
D	1.10	1.30	J	0.10	0.30
E	-	0.05	K	0.20	0.40



Top View

Mounting Pad Layout



*Dimensions in millimeters

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

Parameter		Symbol	Ratings		Unit
			N-Ch	P-Ch	
Drain-Source Voltage		V_{DS}	20	-20	V
Gate-Source Voltage		V_{GS}	±12		V
Continuous Drain Current [1] @V_{GS}=4.5V	T_A=25°C	I_D	0.56	-0.5	A
	T_A=85°C		0.4	-0.35	
Pulsed Drain Current [3]		I_{DM}	1.68	-1.5	A
Power Dissipation	T_A=25°C	P_D	280		mW
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150		°C
Thermal Resistance Ratings					
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	450		°C/W
Thermal Resistance Junction-Ambient [2]			833		
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	320		

N-Ch ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	20	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	0.45	-	1.2	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	1	-	S	V_{DS}=10V, I_D=400mA
Gate- Source Leakage Current		I_{GSS}	-	-	±10	μA	V_{GS}= ±12V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=16V, V_{GS}=0
	T_J=70°C		-	-	10		
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	450	mΩ	V_{GS}=4.5V, I_D=500mA
			-	-	700		V_{GS}=2.5V, I_D=400mA
			-	-	1200		V_{GS}=1.8V, I_D=350mA
Gate Resistance		R_g	-	4.6	-	Ω	V_{GS}=0V, f=1MHz
Total Gate Charge		Q_g	-	0.76	-	nC	I_D=250mA V_{DS}=10V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	0.074	-		
Gate-Drain Charge		Q_{gd}	-	0.27	-		
Turn-on Delay Time		$T_{d(on)}$	-	5	-	nS	V_{DS}=10V I_D=200mA V_{GS}=4.5V R_G=10Ω
Rise Time		T_r	-	5	-		
Turn-off Delay Time		$T_{d(off)}$	-	24	-		
Fall Time		T_f	-	18	-		
Input Capacitance		C_{iss}	-	60	-	pF	V_{GS}=0 V_{DS}=10V f=1MHz
Output Capacitance		C_{oss}	-	14	-		
Reverse Transfer Capacitance		C_{rss}	-	9	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	0.56	A	
Pulsed Source Current [3]		I_{SM}	-	-	1.68		
Forward On Voltage [4]		V_{SD}	-	-	1.2	V	I_S=150mA, V_{GS}=0

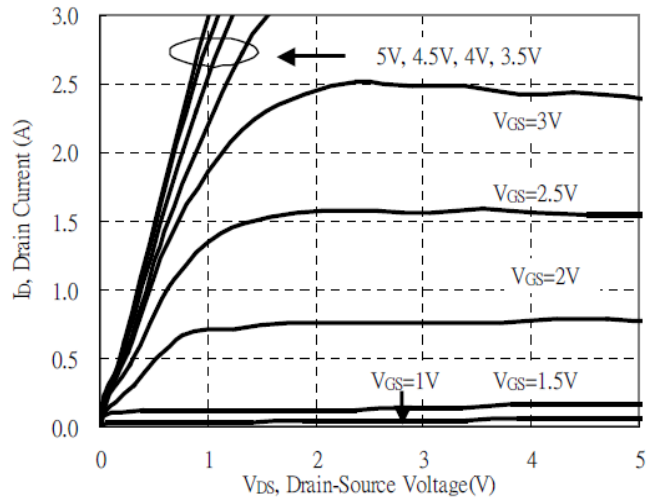
P-Ch ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-20	-	-	V	V_{GS}=0, I_D= -250μA
Gate Threshold Voltage		$V_{GS(th)}$	-0.45	-	-1.2	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Transconductance		g_{fs}	-	0.7	-	S	V_{DS}= -10V, I_D= -250mA
Gate- Source Leakage Current		I_{GSS}	-	-	±10	μA	V_{GS}= ±12V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	-1	μA	V_{DS}= -16V, V_{GS}=0
	T_J=70°C		-	-	-10		
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	900	mΩ	V_{GS}= -4.5V, I_D= -500mA
			-	-	1400		V_{GS}= -2.5V, I_D= -300mA
			-	-	2700		V_{GS}= -1.8V, I_D= -150mA
Gate Resistance		R_g	-	5.3	-	Ω	V_{GS}=0V, f=1MHz
Total Gate Charge		Q_g	-	1.5	-	nC	I_D= -250mA V_{DS}= -10V V_{GS}= -4.5V
Gate-Source Charge		Q_{gs}	-	0.28	-		
Gate-Drain Charge		Q_{gd}	-	0.44	-		
Turn-on Delay Time		$T_{d(on)}$	-	5	-	nS	V_{DS}= -10V I_D= -200mA V_{GS}= -4.5V R_G=10Ω
Rise Time		T_r	-	6	-		
Turn-off Delay Time		$T_{d(off)}$	-	42	-		
Fall Time		T_f	-	14	-		
Input Capacitance		C_{iss}	-	59	-	pF	V_{GS}=0 V_{DS}= -10V f=1MHz
Output Capacitance		C_{oss}	-	21	-		
Reverse Transfer Capacitance		C_{rss}	-	15	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	-0.5	A	
Pulsed Source Current [3]		I_{SM}	-	-	-1.5		
Forward On Voltage [4]		V_{SD}	-	-	-1.2	V	I_S= -150mA, V_{GS}=0

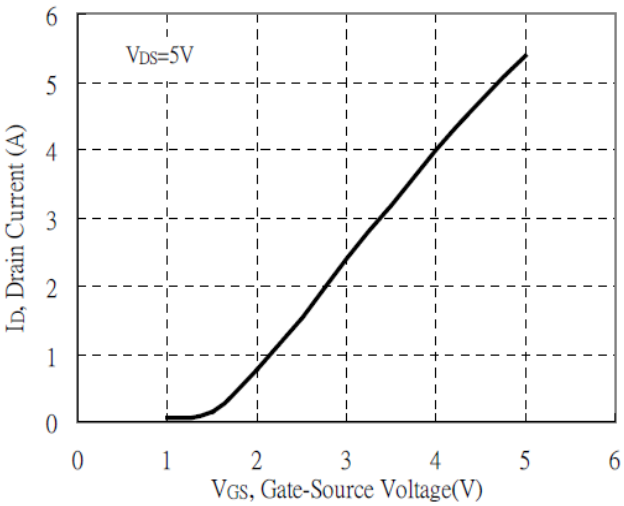
Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2oz copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature, pulse width≦10μs, duty cycle≦2%.
4. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.

N-Ch CHARACTERISTIC CURVES

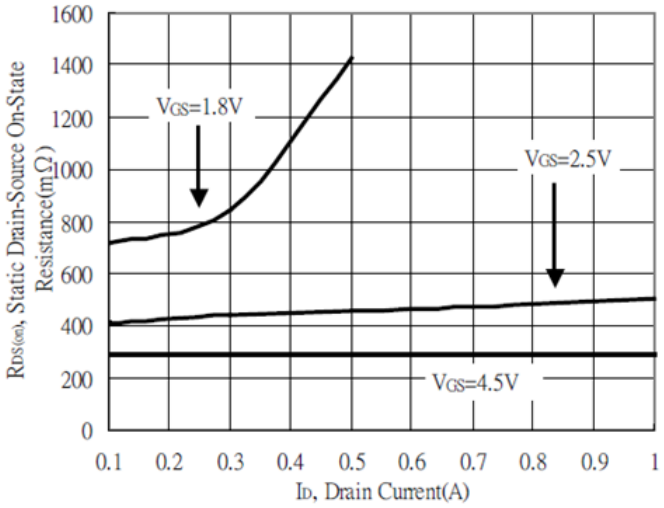
Typical Output Characteristics



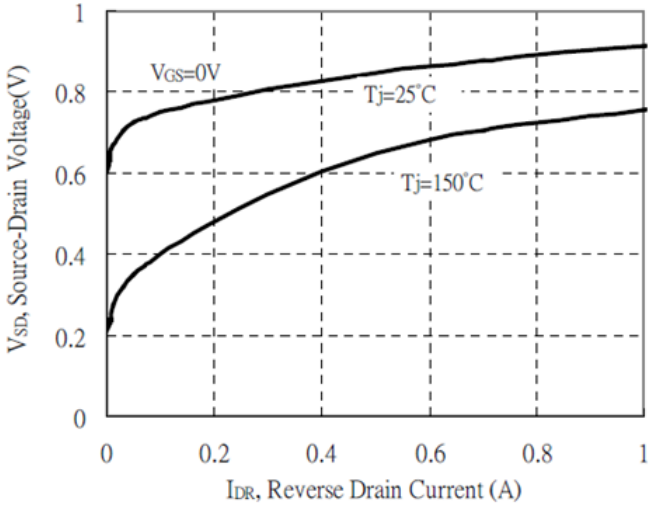
Typical Transfer Characteristics



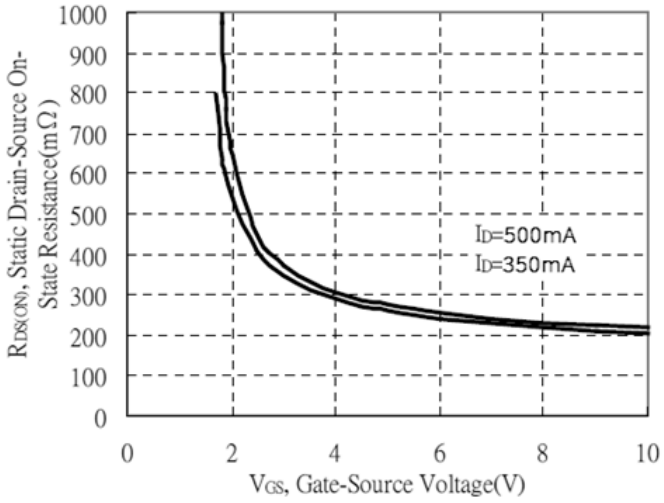
Static Drain-Source On-State resistance vs Drain Current



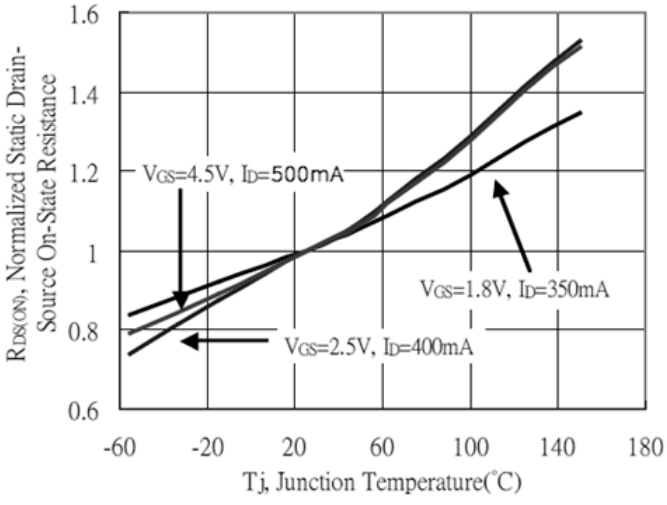
Reverse Drain Current vs Source-Drain Voltage



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

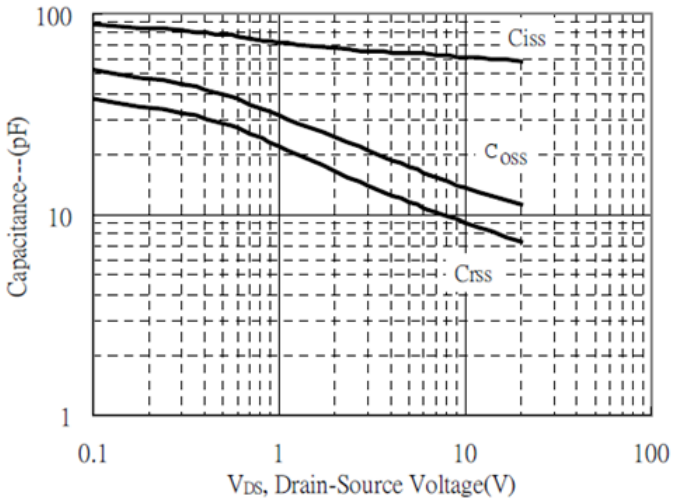


Drain-Source On-State Resistance vs Junction Tempearture

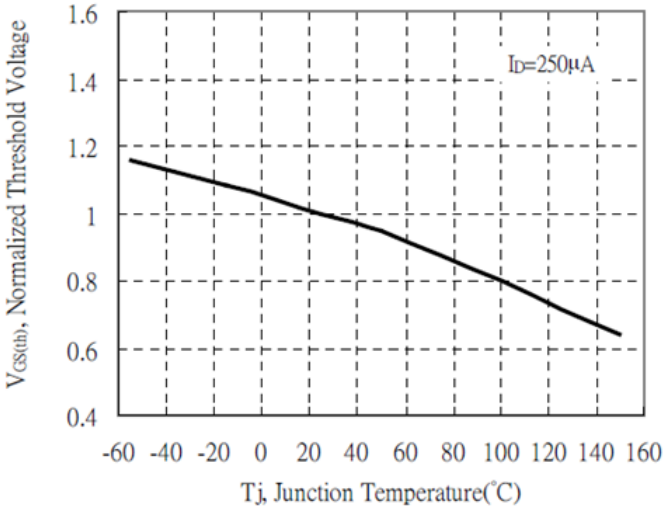


N-Ch CHARACTERISTIC CURVES

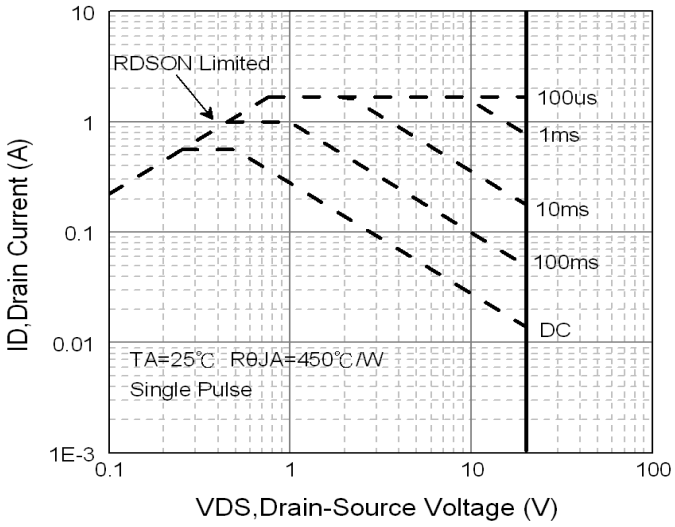
Capacitance vs Drain-to-Source Voltage



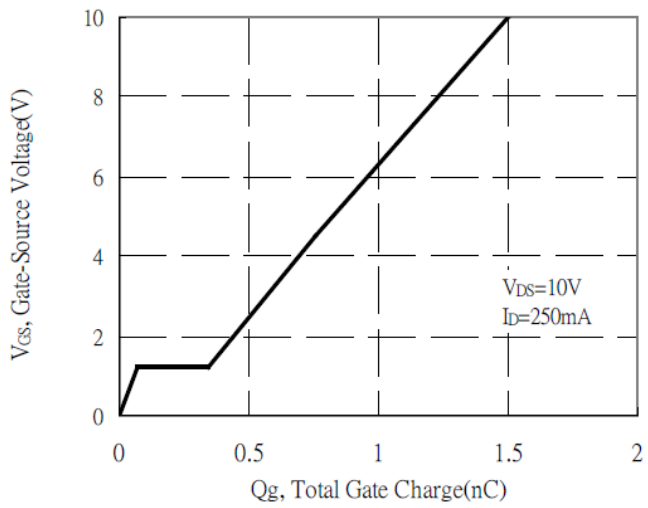
Threshold Voltage vs Junction Tempearture



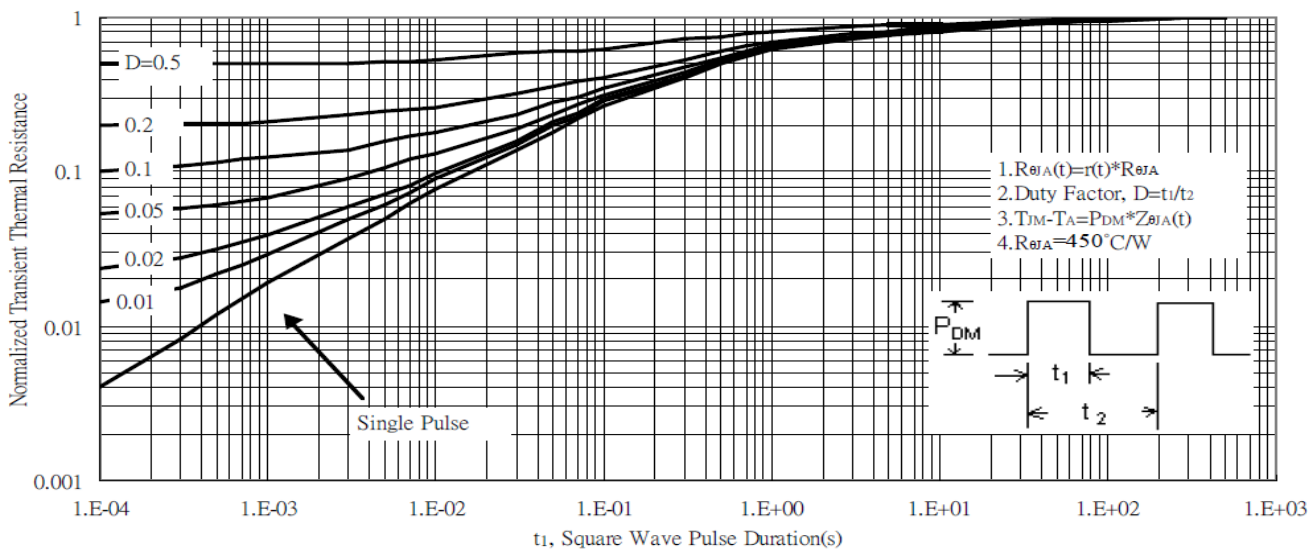
Maximum Safe Operating Area



Gate Charge Characteristics

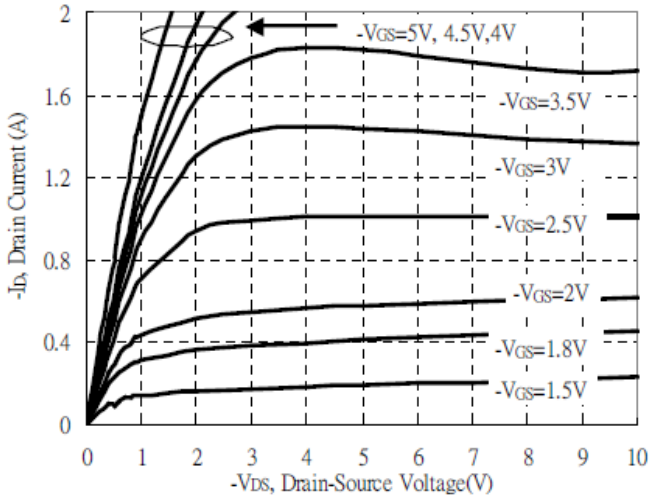


Transient Thermal Response Curves

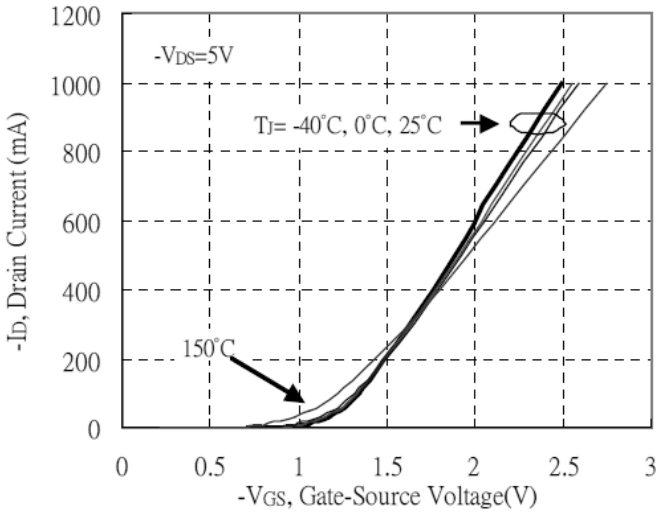


P-Ch CHARACTERISTIC CURVES

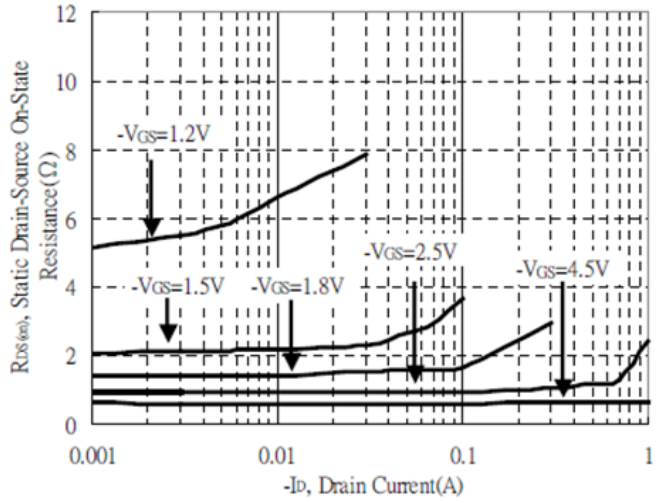
Typical Output Characteristics



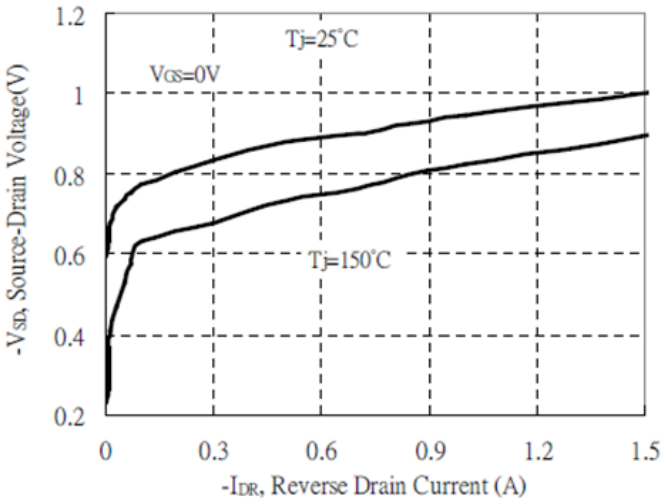
Typical Transfer Characteristics



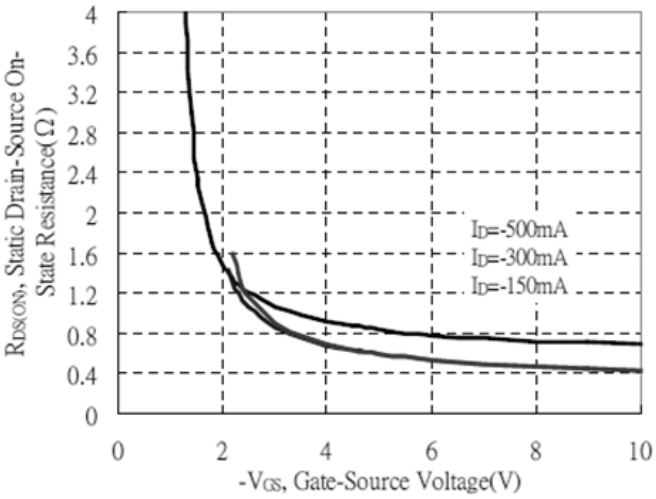
Static Drain-Source On-State resistance vs Drain Current



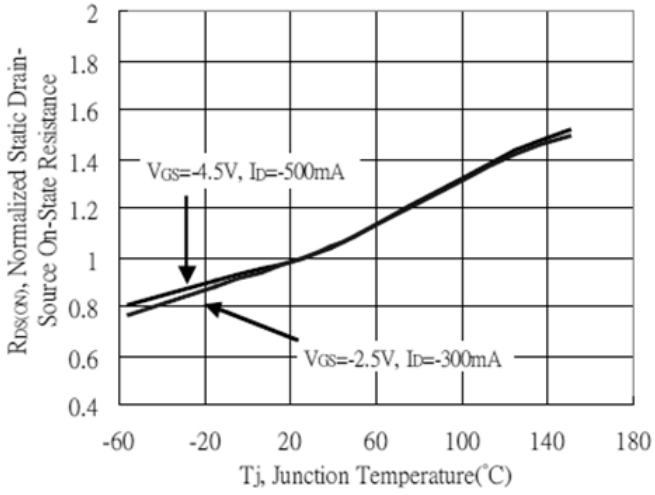
Reverse Drain Current vs Source-Drain Voltage



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

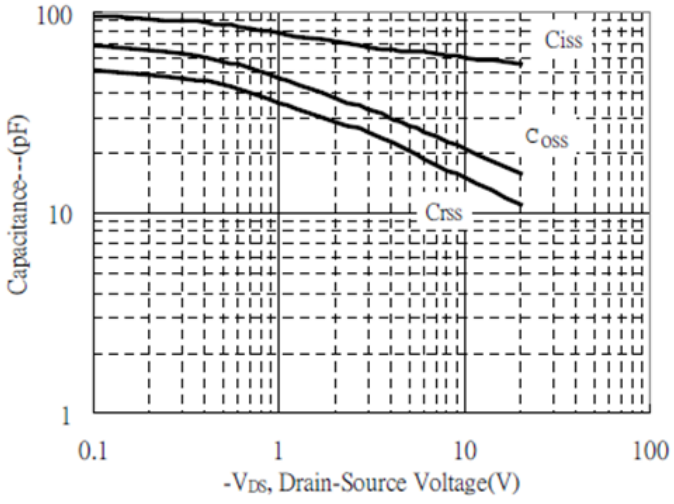


Drain-Source On-State Resistance vs Junction Tempearture

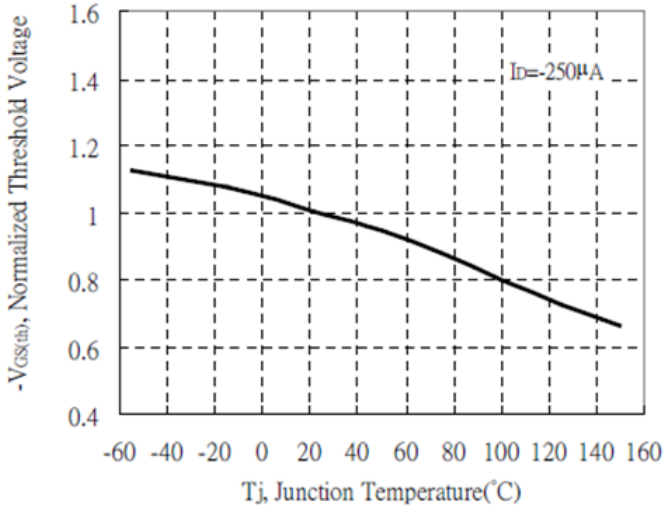


P-Ch CHARACTERISTIC CURVES

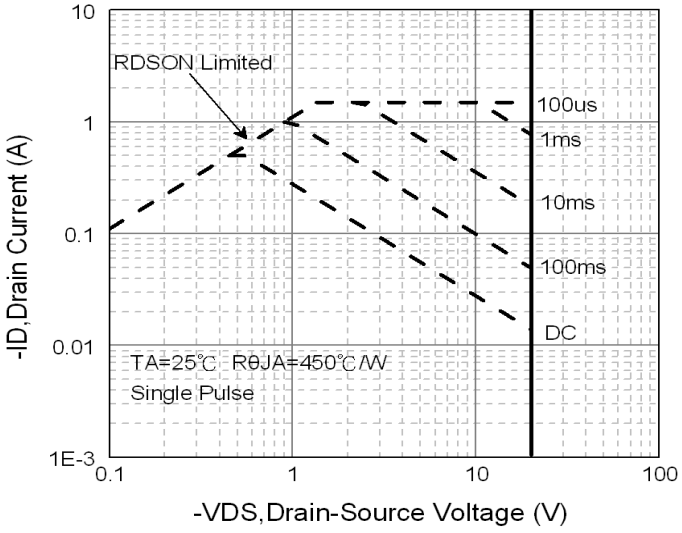
Capacitance vs Drain-to-Source Voltage



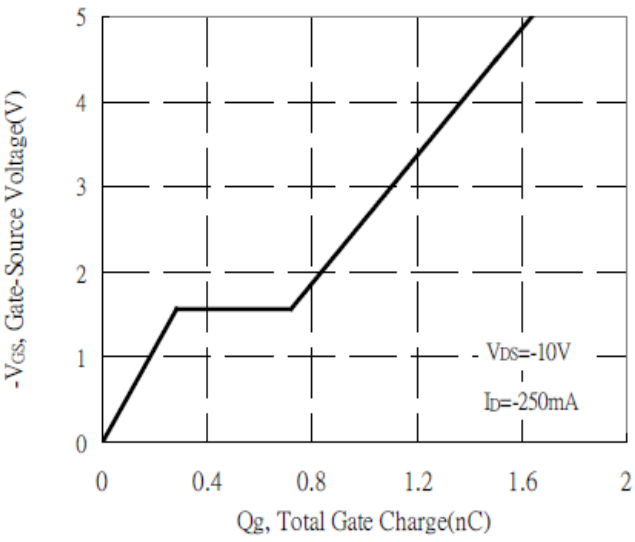
Threshold Voltage vs Junction Tempearture



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves