Features

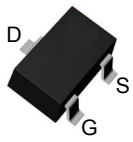
- 30V/2.5A,
  $R_{DS(ON)}$= 60mΩ(max.) @ V_{GS}=4.5V
  $R_{DS(ON)}$= 70mΩ(max.) @ V_{GS}=2.5V
  $R_{DS(ON)}$= 113mΩ(max.) @ V_{GS}=1.8V
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

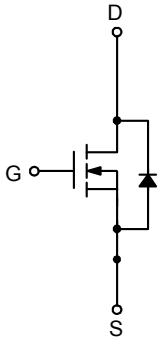
- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

"

Pin Description



Top View of SC-70



N-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±12	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_A=25°C	1	A
I_D	Continuous Drain Current	T_A=25°C	2.5	A
		T_A=70°C	2.0	
I_{DM} [a]	Pulsed Drain Current	T_A=25°C	13.6	A
P_D	Maximum Power Dissipation	T_A=25°C	0.7	W
		T_A=70°C	0.45	
$R_{\theta JA}$ [b]	Thermal Resistance-Junction to Ambient	Steady State	180	°C/W

Note a：Pulse width limited by max. junction temperature.
Note b：Surface Mounted on 1in^2 pad area.

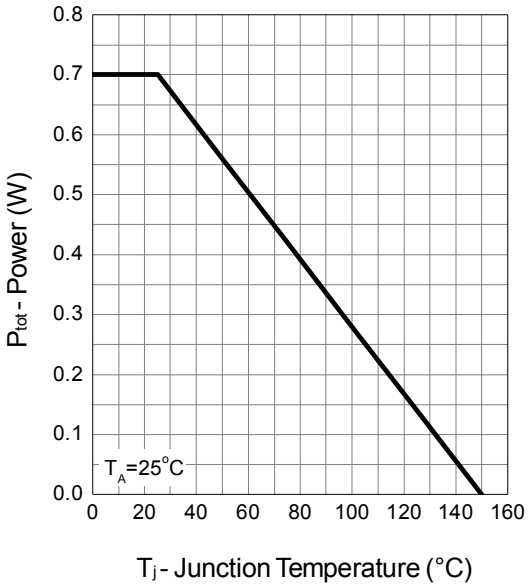
Electrical Characteristics (Cont.) (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.5	0.7	1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=4.5V, I_{DS}=2.5A	-	50	60	mΩ
		V_{GS}=2.5V, I_{DS}=2A	-	60	70	mΩ
		V_{GS}=1.8V, I_{DS}=2A	-	75	113	mΩ
Diode Characteristics						
V_{SD} [c]	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V	-	0.7	1	V
t_{rr}	Reverse Recovery Time	I_{SD}=4.5A, dI_{SD}/dt=100A/μs	-	11.7	-	ns
Q_{rr}	Reverse Recovery Charge		-	3.7	-	nC
Dynamic Characteristics [c]						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz	-	286	372	pF
C_{oss}	Output Capacitance		-	60	78	
C_{rss}	Reverse Transfer Capacitance		-	50	56	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V, R_L=10Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	3.5	-	ns
t_r	Turn-on Rise Time		-	13.3	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	13.2	-	
t_f	Turn-off Fall Time		-	2	-	
Gate Charge Characteristics [d]						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_{DS}=4.5A	-	4	5.2	nC
Q_{gs}	Gate-Source Charge		-	0.3	-	
Q_{gd}	Gate-Drain Charge		-	1.5	-	

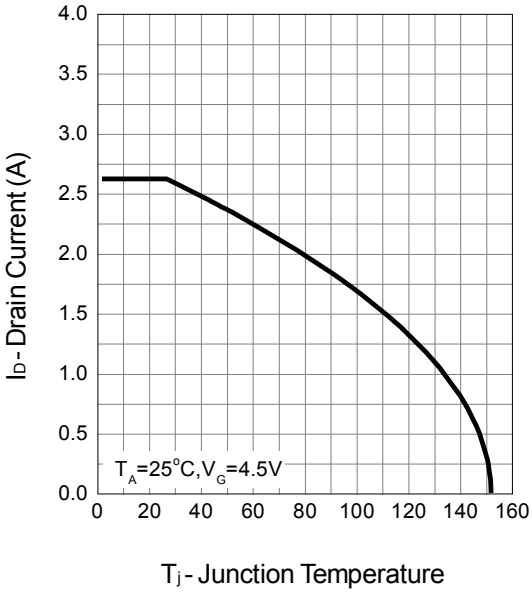
Note c：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note d：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

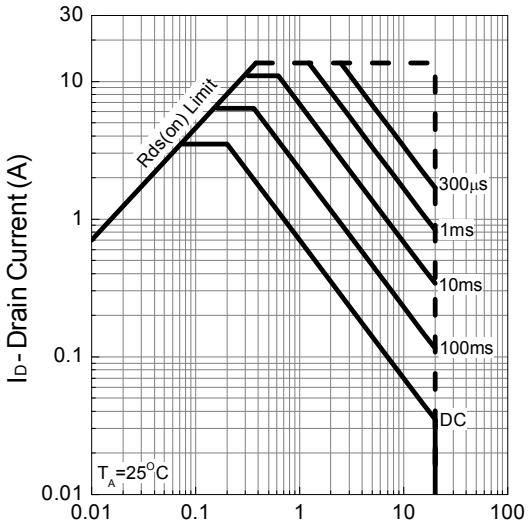
Power Dissipation



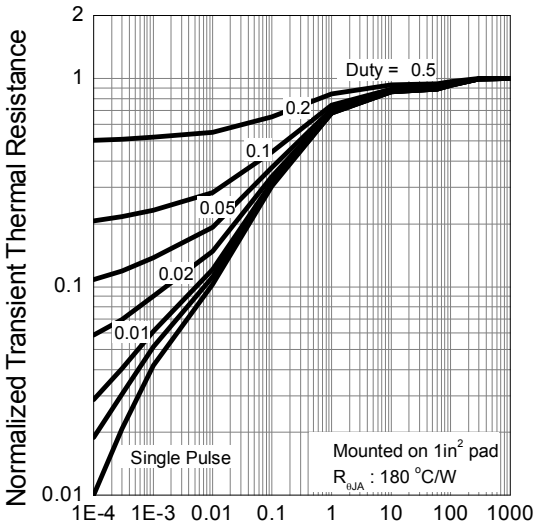
Drain Current



Safe Operation Area

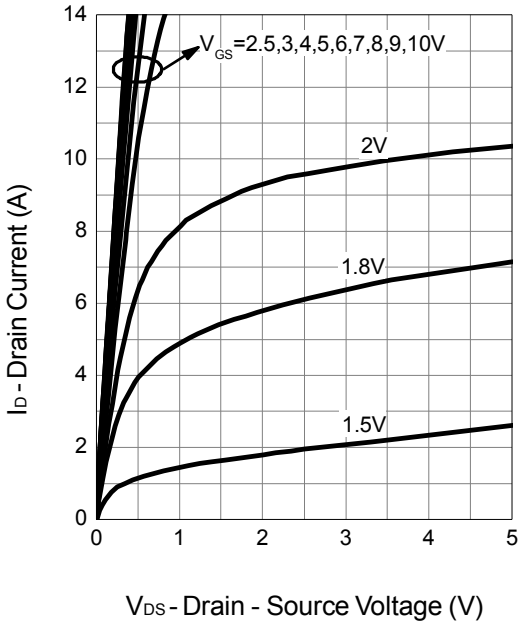


Thermal Transient Impedance

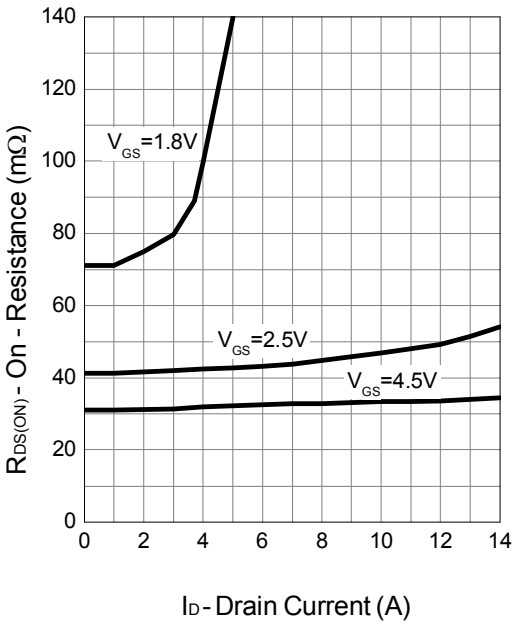


Typical Operating Characteristics (Cont.)

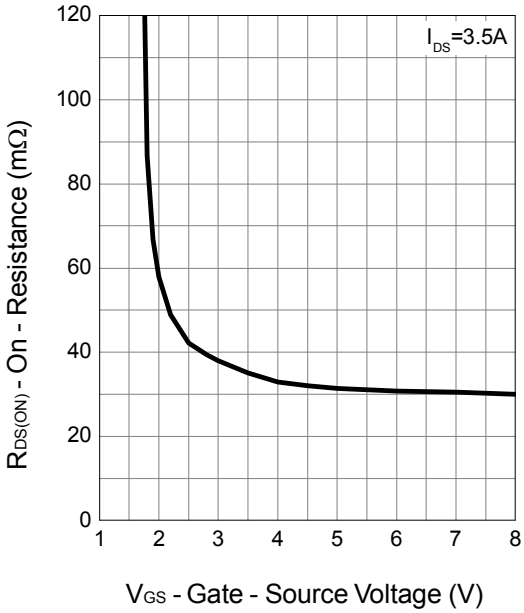
Output Characteristics



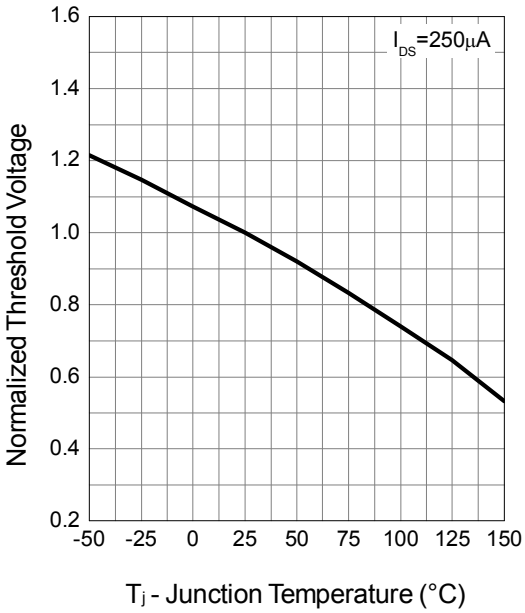
Drain-Source On Resistance



Gate-Source On Resistance

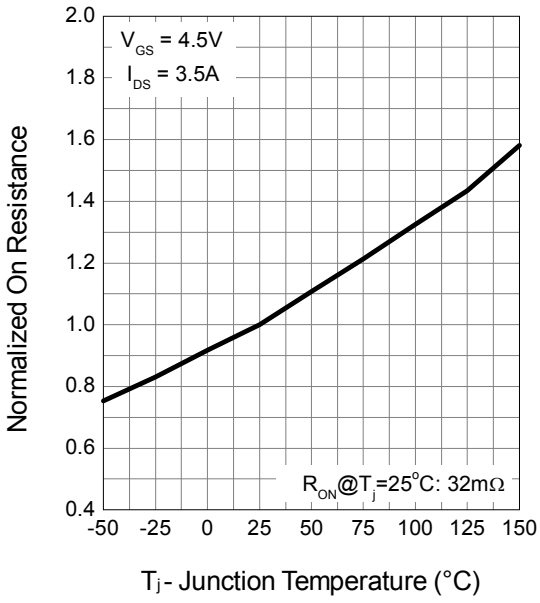


Gate Threshold Voltage

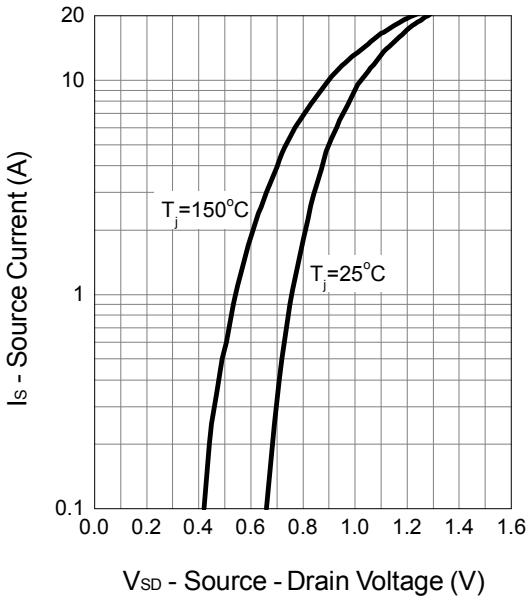


Typical Operating Characteristics (Cont.)

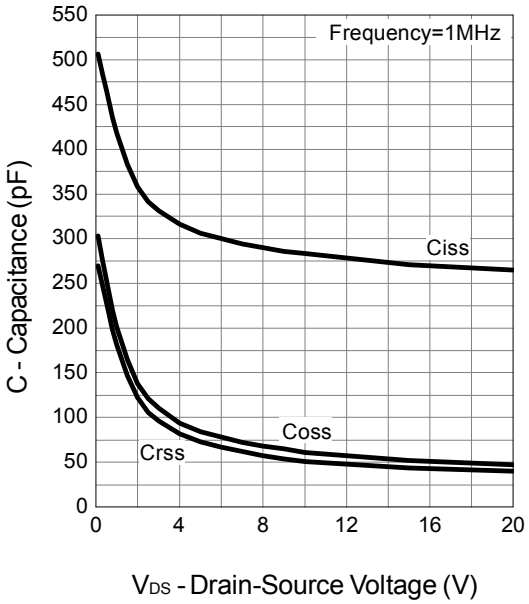
Drain-Source On Resistance



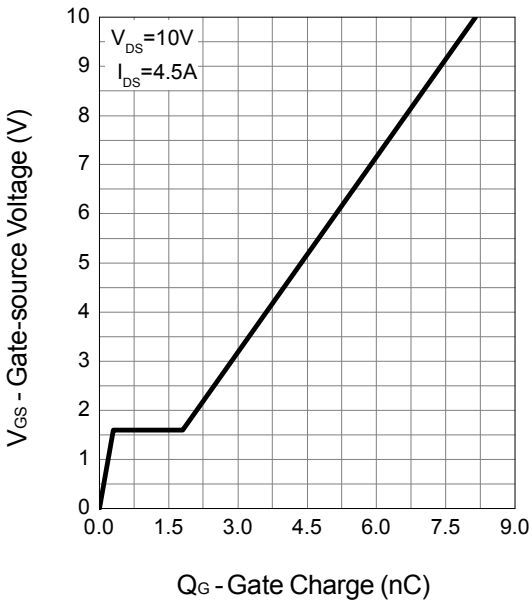
Source-Drain Diode Forward



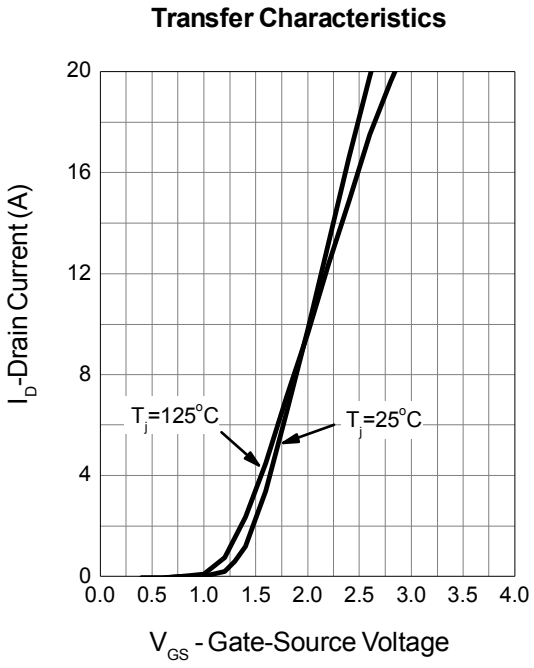
Capacitance



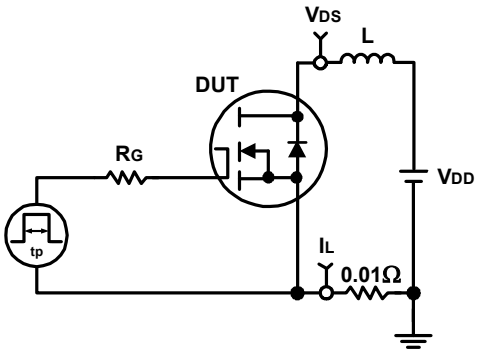
Gate Charge

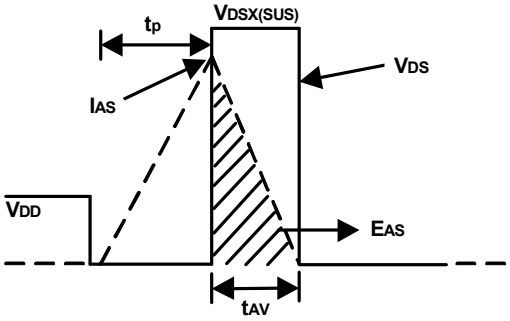


Typical Operating Characteristics (Cont.)



Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms