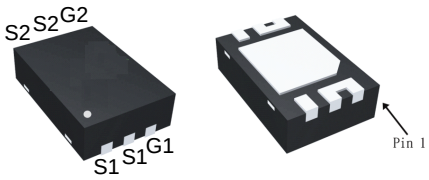
Features

- 20V/9.7A,
  $R_{DS(ON)}$= 6mΩ (typ.) @ V_{GS}=4.5V
  $R_{DS(ON)}$= 6.2mΩ (typ.) @ V_{GS}=4V
  $R_{DS(ON)}$= 6.3mΩ (typ.) @ V_{GS}=3.7V
  $R_{DS(ON)}$= 6.6mΩ (typ.) @ V_{GS}=3.1V
  $R_{DS(ON)}$= 7.3mΩ (typ.) @ V_{GS}=2.5V
- ESD protection
- 100% UIS Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

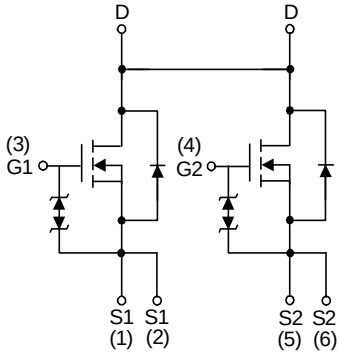
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.
- One Cell Li-ion Battery Pack.

Pin Description



DFN2x3A-6_EP



N-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		20	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	2	A
I_{DM} [a]	Pulsed Drain Current	T_A=25°C	38	A
I_D [b]	Continuous Drain Current	T_A=25°C	9.7	A
		T_A=70°C	7.5	
P_D [b]	Maximum Power Dissipation	T_A=25°C	1.0	W
		T_A=70°C	0.6	
$R_{\theta JA}$ [c]	Thermal Resistance-Junction to Ambient	t ≤ 10s	80	°C/W
		Steady State	127	°C/W
I_{AS} [d]	Avalanche Current, Single pulse	L=0.1mH	22	A
E_{AS} [d]	Avalanche Energy, Single pulse	L=0.1mH	24.2	mJ

Note a：Pulse width is limited by max. junction temperature.
Note b：t = 999sec.
Note c：$R_{\theta JA}$ steady state t=999s. $R_{\theta JA}$ is measured with the device mounted on 1in^2, FR-4 board with 2oz. Copper.
Note d：UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).

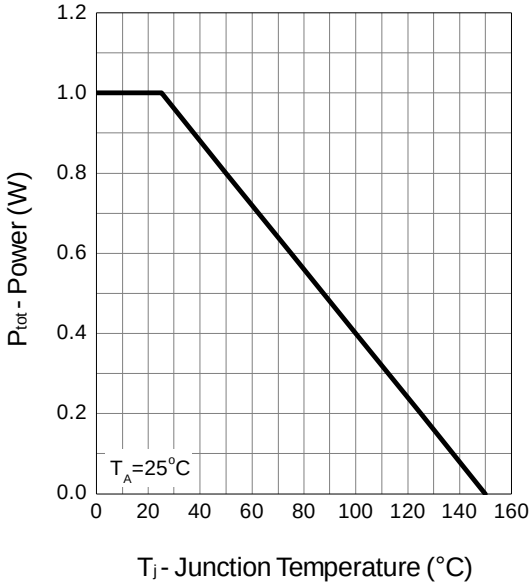
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V, 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	-	-	±10	μA
$R_{DS(ON)}$ [e]	Drain-Source On-state Resistance	V_{GS}=4.5V, I_{DS}=5.5A	-	6	7.5	mΩ
		V_{GS}=4.0V, I_{DS}=5.5A	-	6.2	7.9	
		V_{GS}=3.7V, I_{DS}=5.5A	-	6.3	8.2	
		V_{GS}=3.1V, I_{DS}=5.5A	-	6.6	8.7	
		V_{GS}=2.5V, I_{DS}=5.5A	-	7.3	9.9	
Diode Characteristics						
V_{SD} [e]	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V	-	0.7	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD}=5.5A, dI_{SD}/dt=100A/μs	-	445	-	ns
Q_{rr}	Reverse Recovery Charge		-	2175	-	nC
Dynamic Characteristics [f]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,f=1MHz	-	11	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz	-	1470	1920	pF
C_{oss}	Output Capacitance		-	258	-	
C_{rss}	Reverse Transfer Capacitance		-	202	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V, R_L=10Ω, I_{DS}=1A, V_{GEN}=10V, R_G=1Ω	-	8	15	ns
t_r	Turn-on Rise Time		-	20	36	
$t_{d(OFF)}$	Turn-off Delay Time		-	935	1683	
t_f	Turn-off Fall Time		-	410	738	
Gate Charge Characteristics [f]						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_{DS}=5.5A	-	23.2	33	nC
Q_{gs}	Gate-Source Charge		-	1.9	-	
Q_{gd}	Gate-Drain Charge		-	4.8	-	

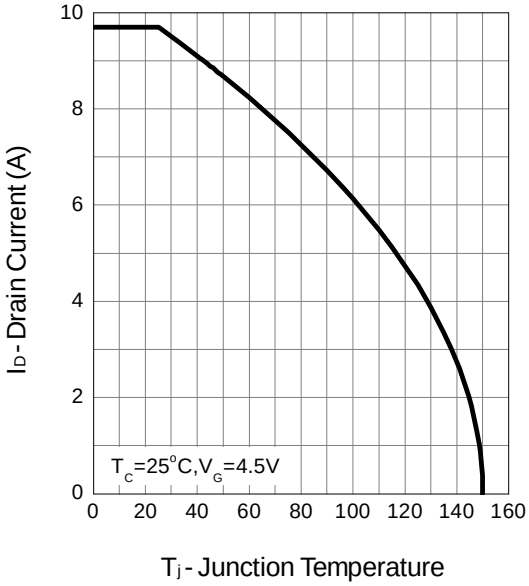
Note e：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note f：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

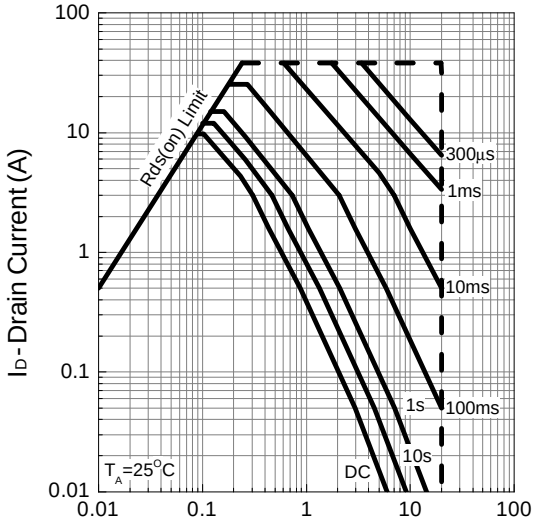
Power Dissipation



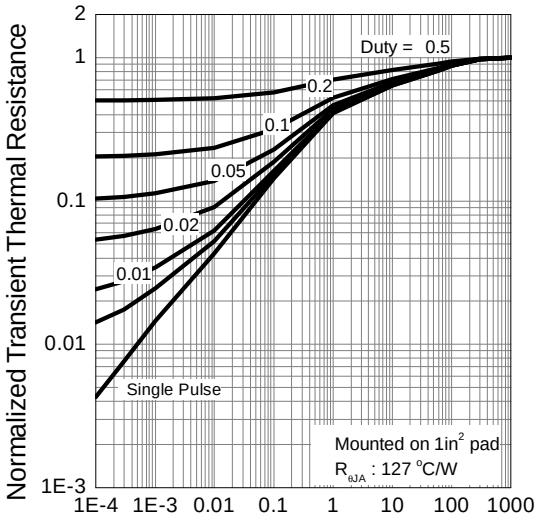
Drain Current



Safe Operation Area

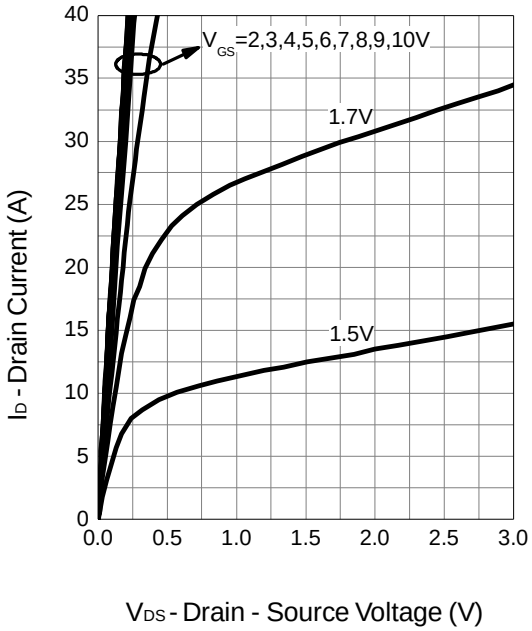


Thermal Transient Impedance

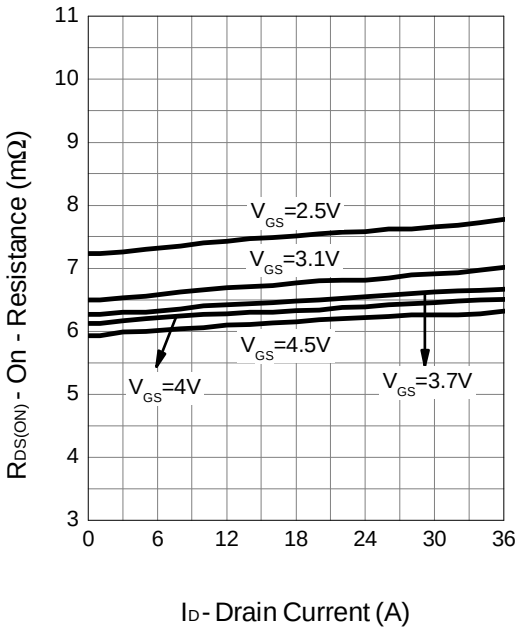


Typical Operating Characteristics (Cont.)

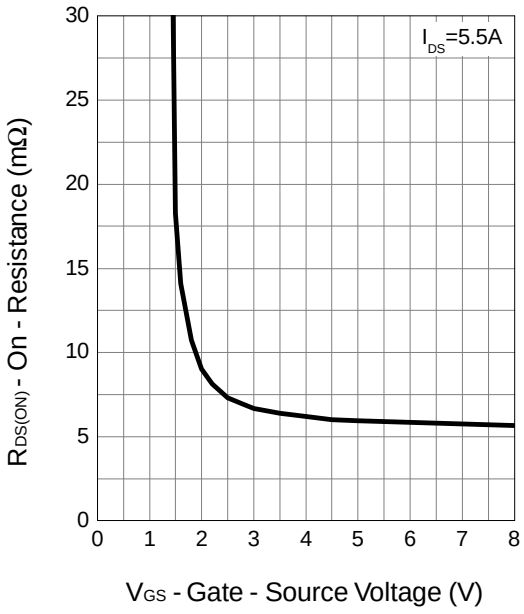
Output Characteristics



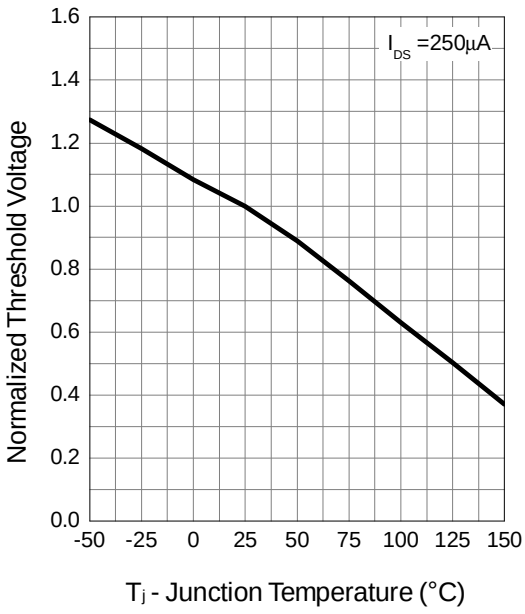
Drain-Source On Resistance



Gate-Source On Resistance

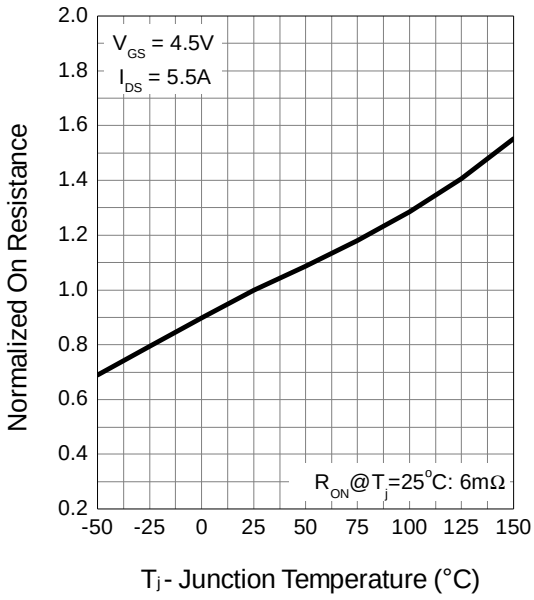


Gate Threshold Voltage

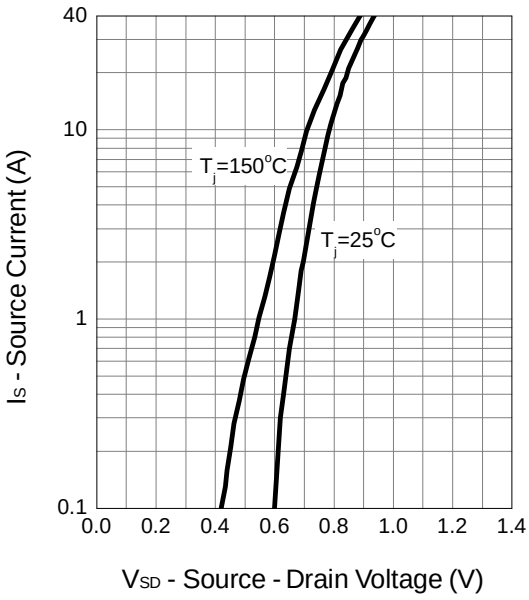


Typical Operating Characteristics (Cont.)

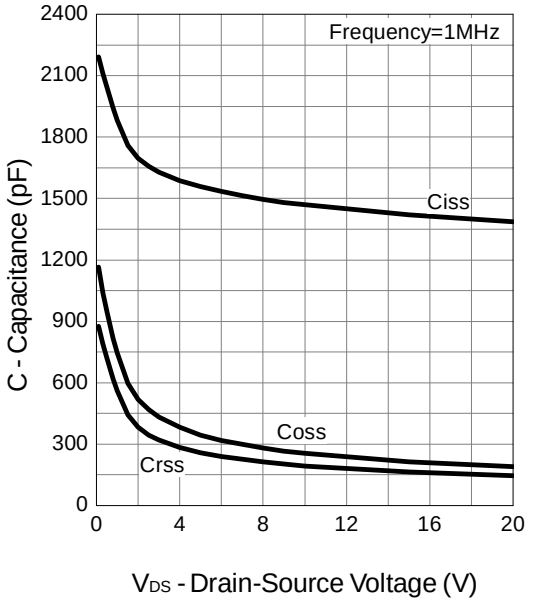
Drain-Source On Resistance



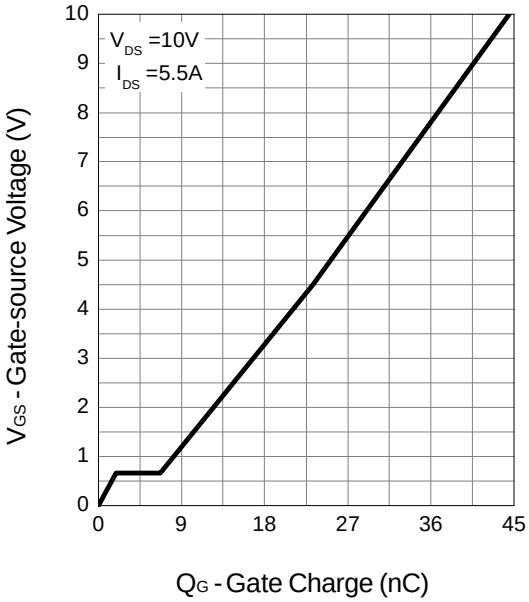
Source-Drain Diode Forward



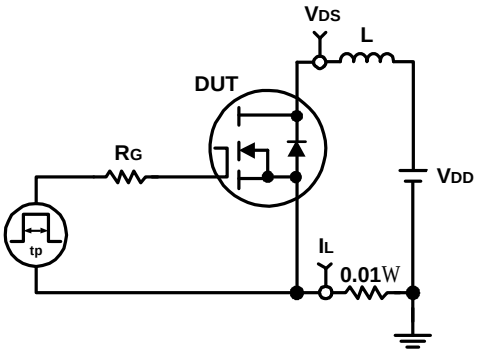
Capacitance

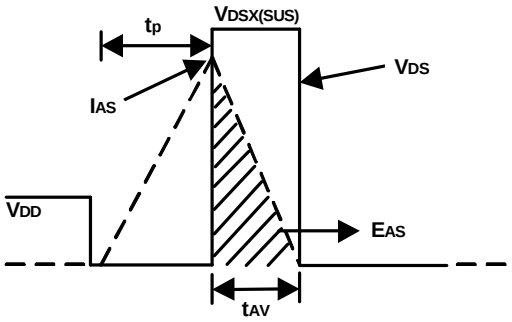


Gate Charge

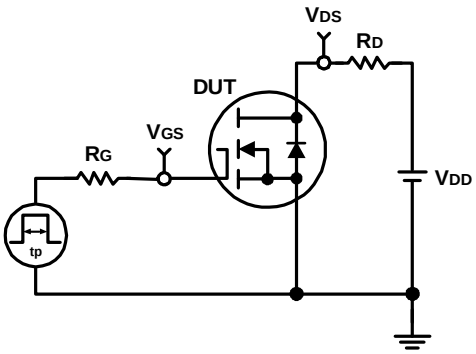


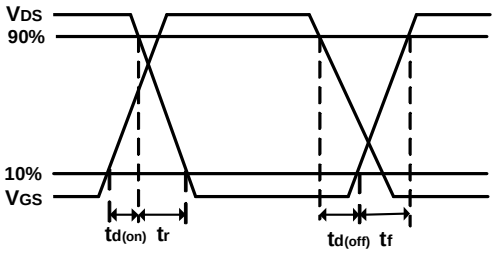
Avalanche Test Circuit and Waveforms



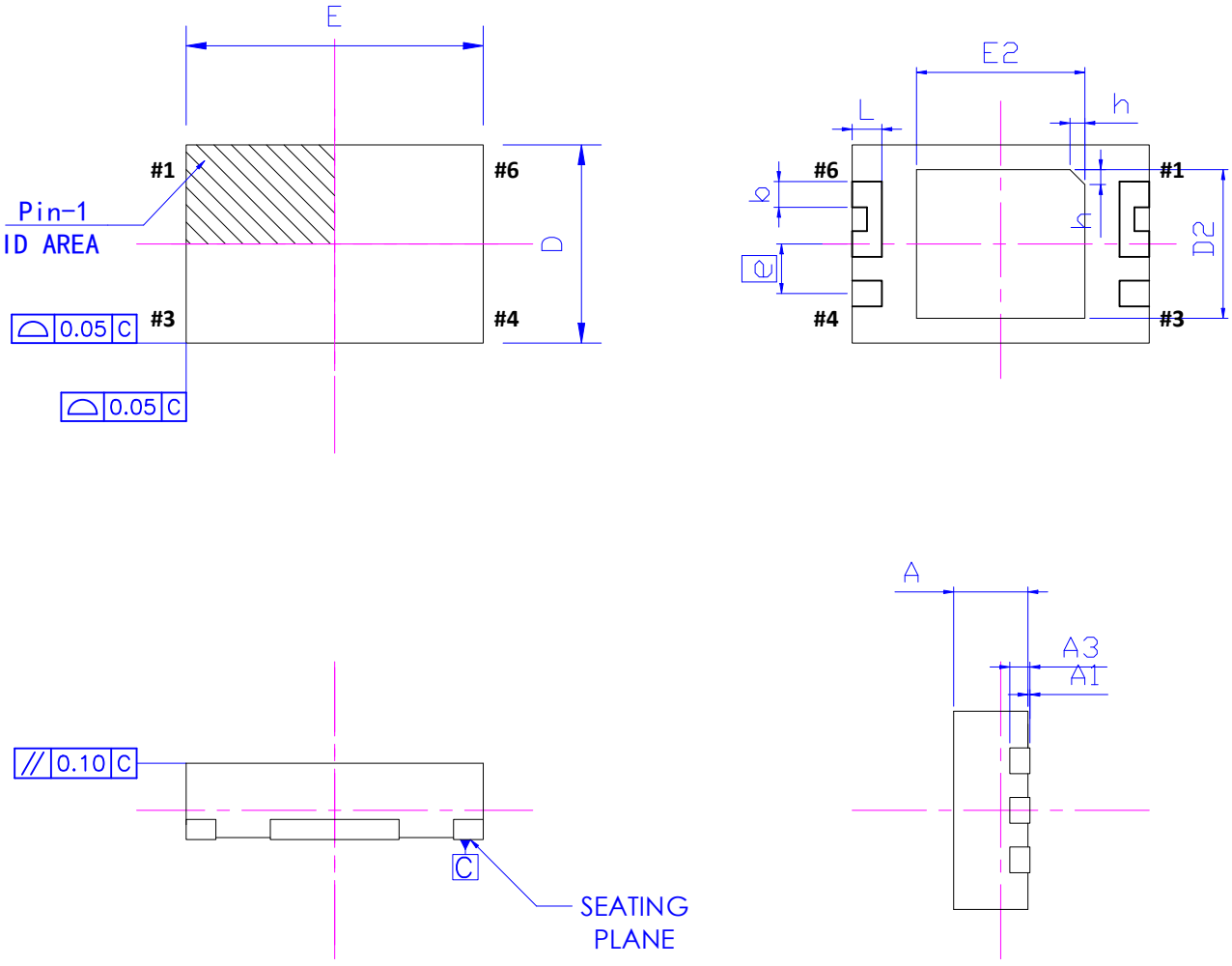


Switching Time Test Circuit and Waveforms





Package Information



Dimensions

Unit	D	E	D2	E2	A	A1	A3	b	e	h	L	y	z
mm	2.10 (2.00) 1.90	3.10 (3.00) 2.90	1.60 (1.50) 1.40	1.80 (1.70) 1.60	0.80 (0.75) 0.70	0.04 (0.02) 0.00	0.203 REF	0.28 (0.26) 0.24	0.50 BSC	0.20 (0.15) 0.10	0.400 (0.300) 0.200	-	-