

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	N Channel	P Channel	Unit
V_{DSS}	Drain-Source Voltage	30	-30	V
V_{GSS}	Gate-Source Voltage	± 20	± 20	
I_D^*	Continuous Drain Current	7	-5	A
I_{DM}^*	300 μs Pulsed Drain Current			
I_S^*	Diode Continuous Forward Current	2.5	-2	A
T_J	Maximum Junction Temperature	150		$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150		
P_D^*	Power Dissipation	$T_A=25^\circ\text{C}$	2	W
		$T_A=100^\circ\text{C}$	0.8	
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient	62.5		$^\circ\text{C}/\text{W}$

Note: *Surface Mounted on 1in² pad area, $t \leq 10\text{sec}$.

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	APM4550K			Unit	
			Min.	Typ.	Max.		
Static Characteristics							
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}, I_{DS}=250\mu\text{A}$	N-Ch	30		V	
		$V_{GS}=0\text{V}, I_{DS}=-250\mu\text{A}$	P-Ch	-30			
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=24\text{V}, V_{GS}=0\text{V}$	N-Ch		1	μA	
				$T_J=85^\circ\text{C}$			30
		$V_{DS}=-24\text{V}, V_{GS}=0\text{V}$	P-Ch				-1
				$T_J=85^\circ\text{C}$			
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu\text{A}$	N-Ch	1	1.5	2	V
		$V_{DS}=V_{GS}, I_{DS}=-250\mu\text{A}$	P-Ch	-1	-1.5	-2	
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$	N-Ch			± 100	nA
			P-Ch			± 100	
$R_{DS(ON)}^a$	Drain-Source On-State Resistance	$V_{GS}=10\text{V}, I_{DS}=7\text{A}$	N-Ch		20	27.5	m Ω
		$V_{GS}=-10\text{V}, I_{DS}=-5\text{A}$	P-Ch		40	50	
		$V_{GS}=4.5\text{V}, I_{DS}=5\text{A}$	N-Ch		30	40	
		$V_{GS}=-4.5\text{V}, I_{DS}=-4\text{A}$	P-Ch		62	80	

Electrical Characteristics (Cont.) ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	APM4550K			Unit
			Min.	Typ.	Max.	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD}=2.5\text{A}, V_{GS}=0\text{V}$	N-Ch	0.8	1.3	V
		$I_{SD}=-2\text{A}, V_{GS}=0\text{V}$	P-Ch	-0.8	-1.3	
t_{rr}	Reverse Recovery Time	N-Channel $I_{SD}=7\text{A}, dI_{SD}/dt=100\text{A}/\mu\text{s}$	N-Ch	8		ns
			P-Ch	13		
Q_{rr}	Reverse Recovery Charge	N-Channel $I_{SD}=-5\text{A}, dI_{SD}/dt=100\text{A}/\mu\text{s}$	N-Ch	3		nC
			P-Ch	5		
Dynamic Characteristics^b						
R_G	Gate Resistance	$V_{GS}=0\text{V}, V_{DS}=0\text{V}, F=1\text{MHz}$	N-Ch	2		Ω
			P-Ch	8.3		
C_{iss}	Input Capacitance	N-Channel $V_{GS}=0\text{V}, V_{DS}=15\text{V},$ Frequency=1.0MHz	N-Ch	620		pF
C_{oss}	Output Capacitance		P-Ch	590		
			N-Ch	85		
P-Ch	95					
C_{rss}	Reverse Transfer Capacitance	P-Channel $V_{GS}=0\text{V}, V_{DS}=-15\text{V},$ Frequency=1.0MHz	N-Ch	65		
			P-Ch	70		
$t_{d(ON)}$	Turn-on Delay Time	N-Channel $V_{DD}=15\text{V}, R_L=15\Omega,$ $I_{DS}=1\text{A}, V_{GEN}=10\text{V},$ $R_G=6\Omega$	N-Ch	6	11	ns
			P-Ch	5	9	
T_r	Turn-on Rise Time		N-Ch	10	18	
			P-Ch	12	23	
$t_{d(OFF)}$	Turn-off Delay Time	P-Channel $V_{DD}=-15\text{V}, R_L=15\Omega,$ $I_{DS}=-1\text{A}, V_{GEN}=-10\text{V},$ $R_G=6\Omega$	N-Ch	22	41	
			P-Ch	27	50	
T_f	Turn-off Fall Time		N-Ch	3	6	
			P-Ch	13	24	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	N-Channel $V_{DS}=15\text{V}, V_{GS}=10\text{V},$ $I_{DS}=7\text{A}$	N-Ch	14	19	nC
			P-Ch	11	15	
Q_{gs}	Gate-Source Charge	P-Channel $V_{DS}=-15\text{V}, V_{GS}=-10\text{V},$ $I_{DS}=-5\text{A}$	N-Ch	1.4		
			P-Ch	1.3		
Q_{gd}	Gate-Drain Charge		N-Ch	2.6		
			P-Ch	2.7		

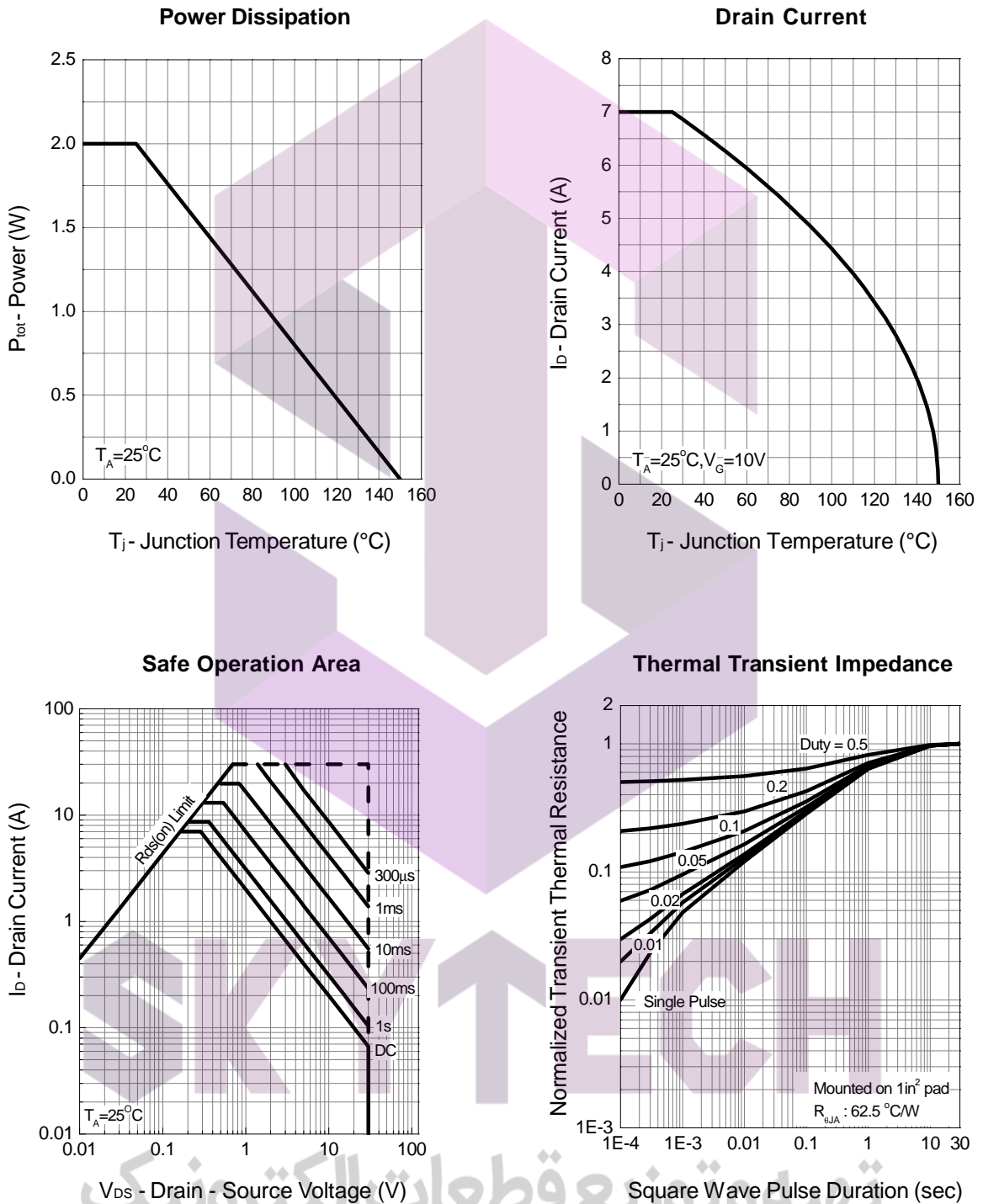
Notes:

a : Pulse test ; pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

b : Guaranteed by design, not subject to production testing.

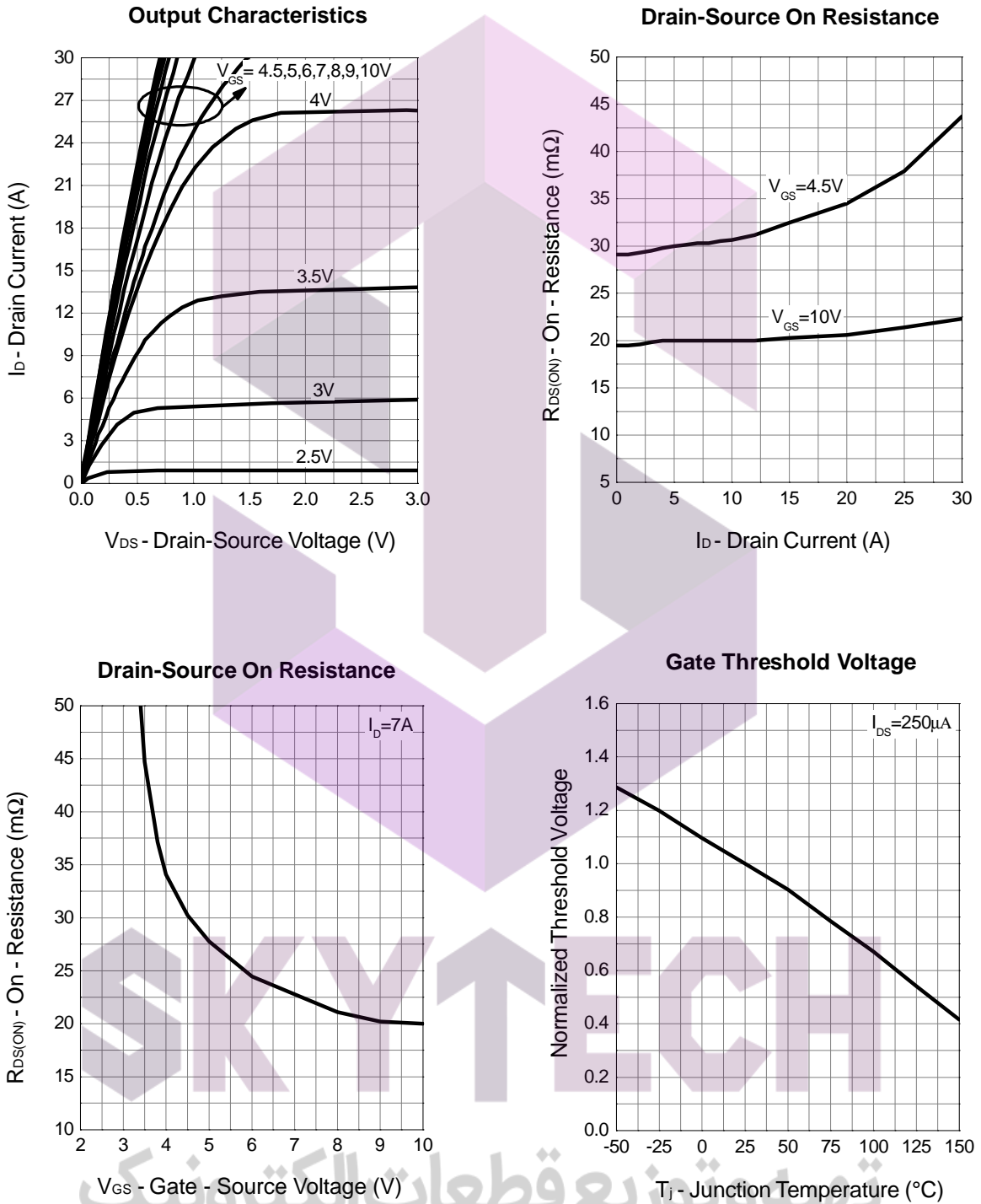
Typical Characteristics

N-Channel



Typical Characteristics (Cont.)

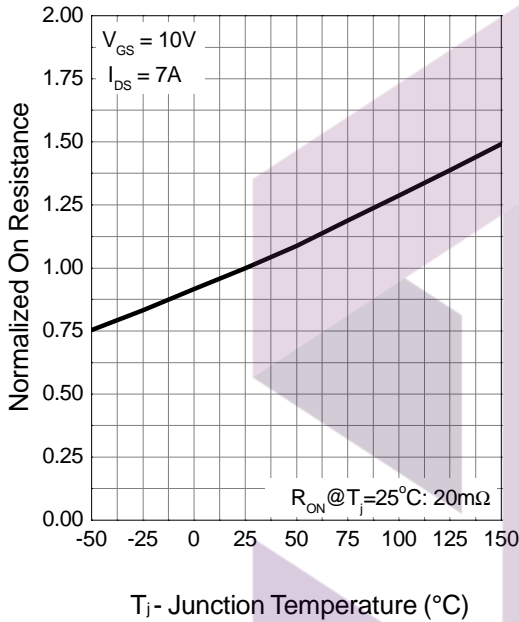
N-Channel



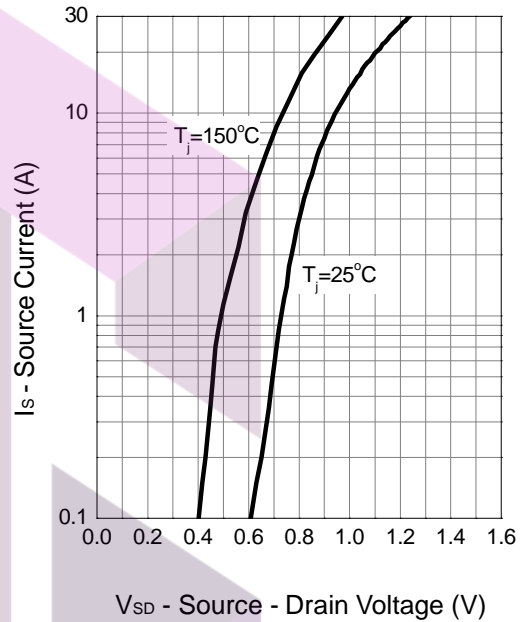
Typical Characteristics (Cont.)

N-Channel

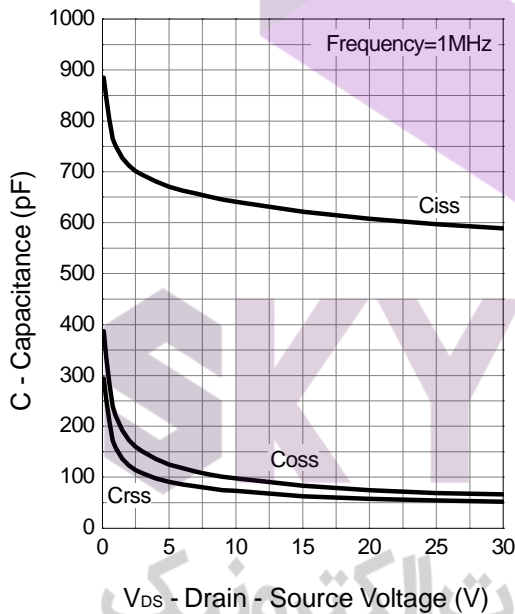
Drain-Source On Resistance



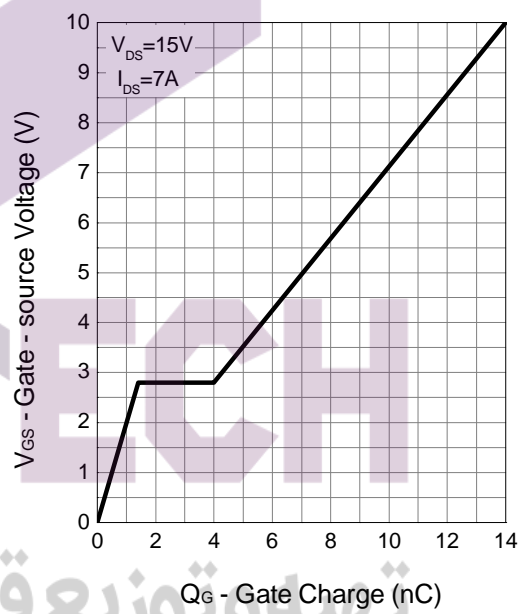
Source-Drain Diode Forward



Capacitance

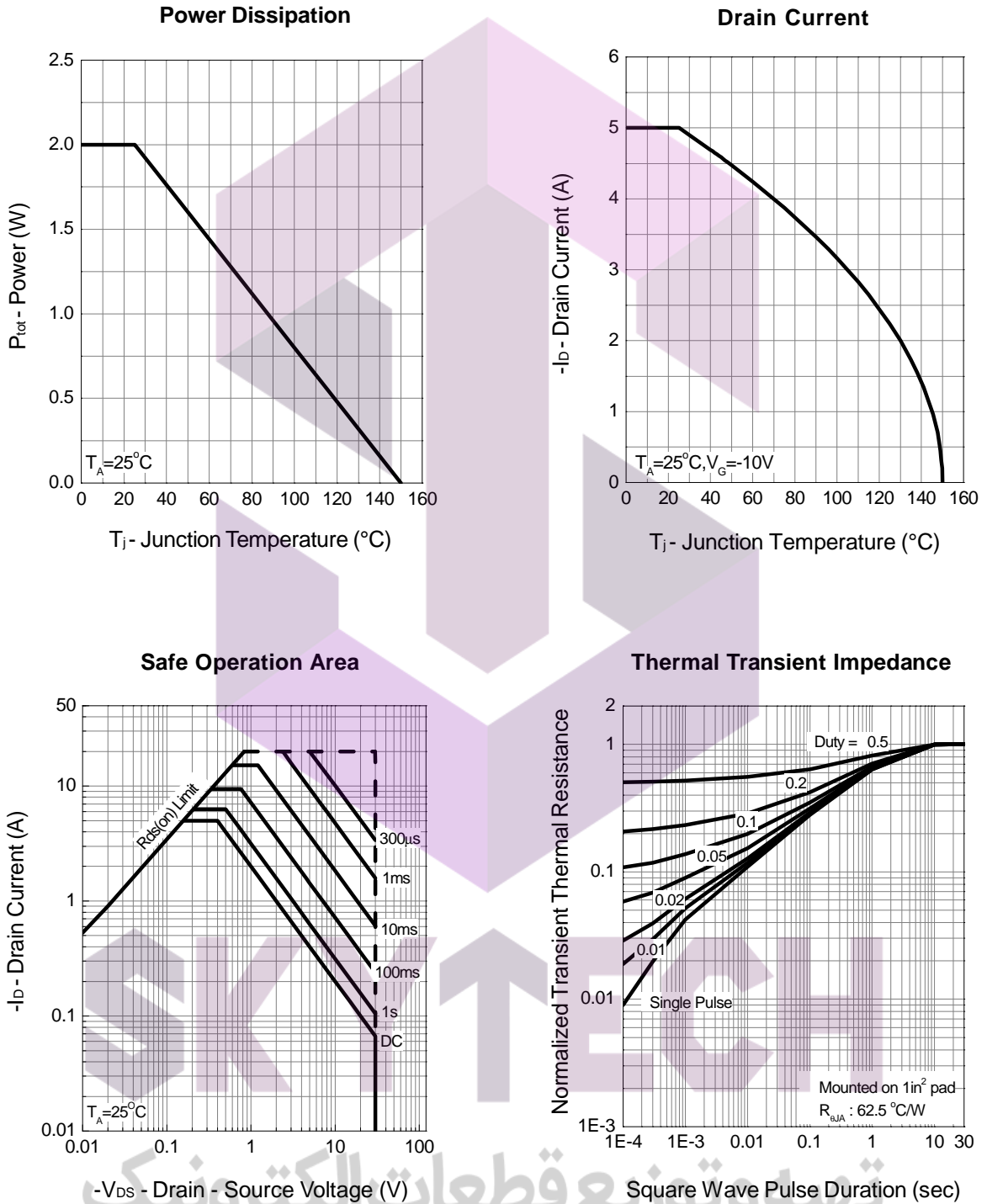


Gate Charge



Typical Characteristics (Cont.)

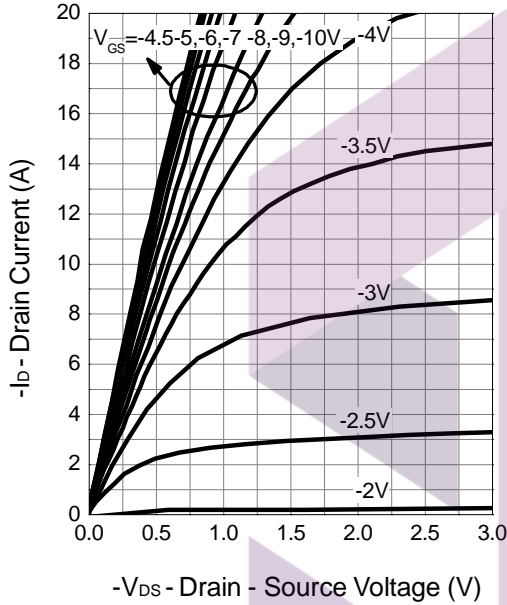
P-Channel



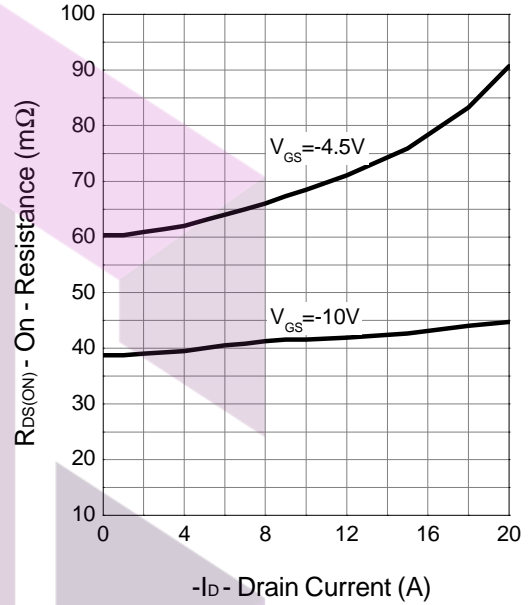
Typical Characteristics (Cont.)

P-Channel

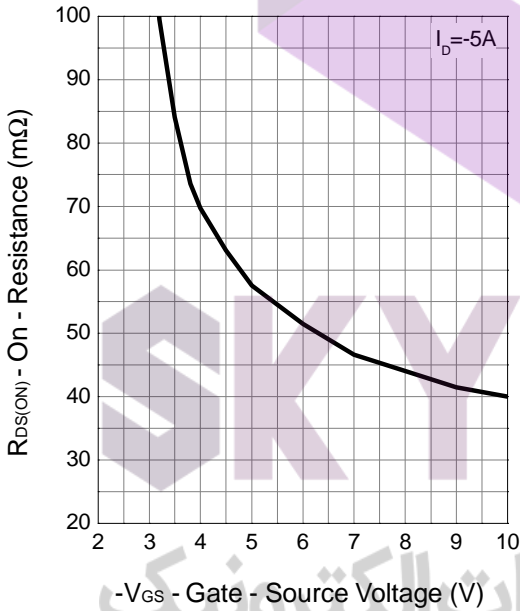
Output Characteristics



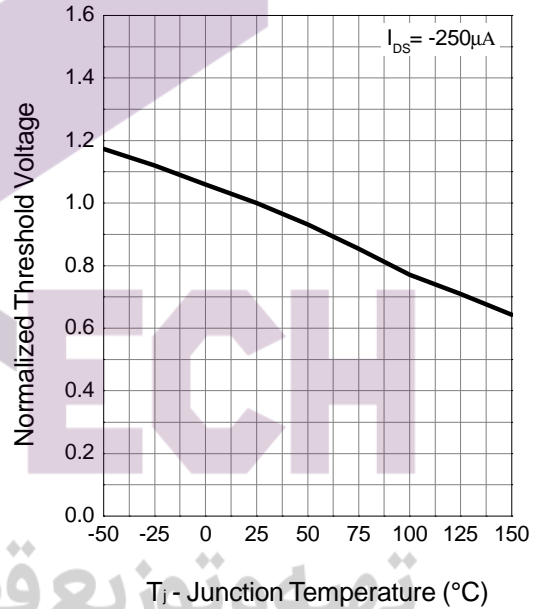
Drain-Source On Resistance



Drain-Source On Resistance

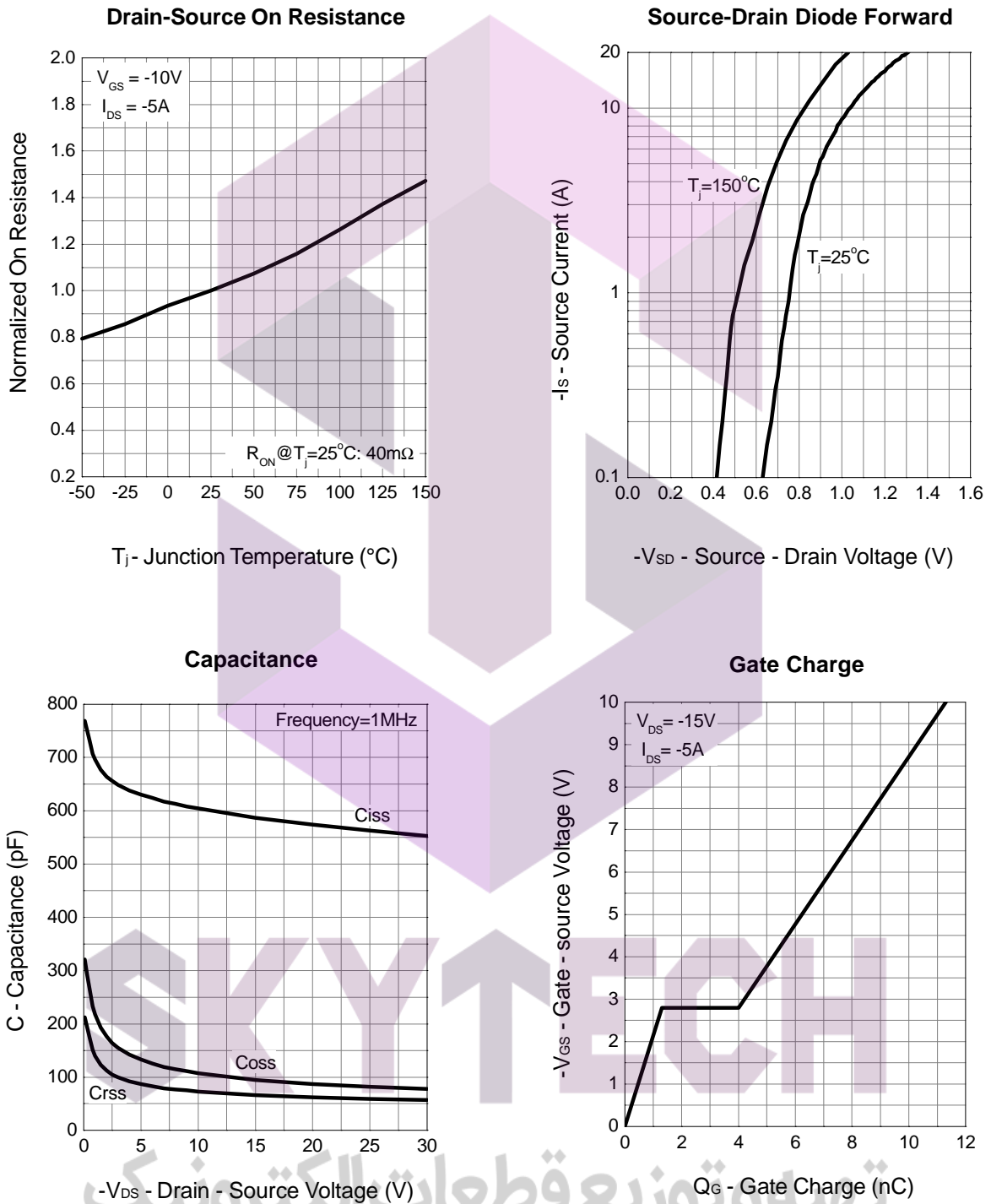


Gate Threshold Voltage



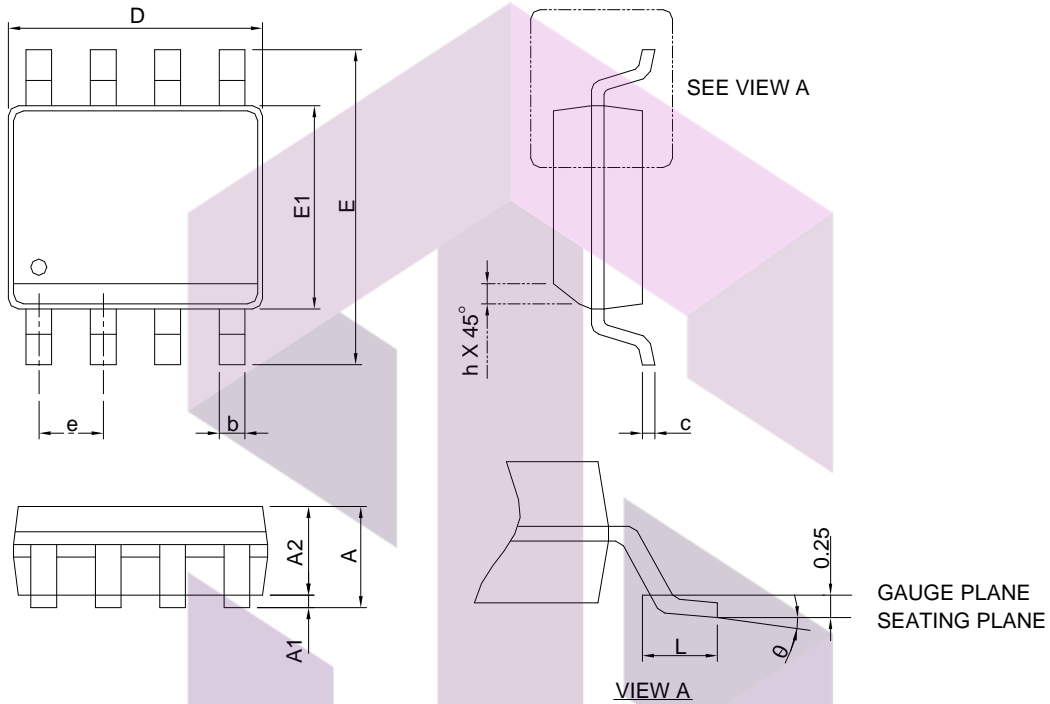
Typical Characteristics (Cont.)

P-Channel



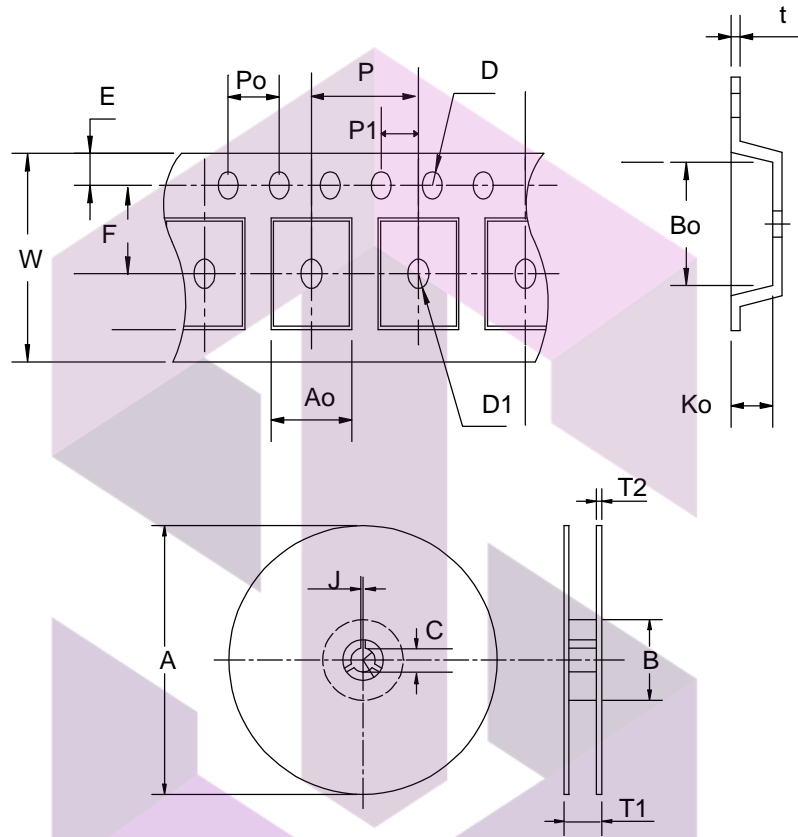
Package Information

SOP-8



SYMBOL	SOP-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A		1.75		0.069
A1	0.10	0.25	0.004	0.010
A2	1.25		0.049	
b	0.31	0.51	0.012	0.020
c	0.17	0.25	0.007	0.010
D	4.90 BSC		0.193 BSC	
E	6.00 BSC		0.236 BSC	
E1	3.90 BSC		0.154 BSC	
e	1.00 BSC		0.050 BSC	
h	0.25	0.50	0.010	0.020
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

Carrier Tape & Reel Dimensions



Application	A	B	C	J	T1	T2	W	P	E
SOP-8	330±1	62 ± 1.5	12.75 + 0.15	2 + 0.5	12.4 +0.2	2± 0.2	12 + 0.3 - 0.1	8± 0.1	1.75± 0.1
	F	D	D1	Po	P1	Ao	Bo	Ko	t
	5.5 ± 0.1	1.55±0.1	1.55+ 0.25	4.0 ± 0.1	2.0 ± 0.1	6.4 ± 0.1	5.2± 0.1	2.1± 0.1	0.3±0.013

(mm)

Devices Per Reel

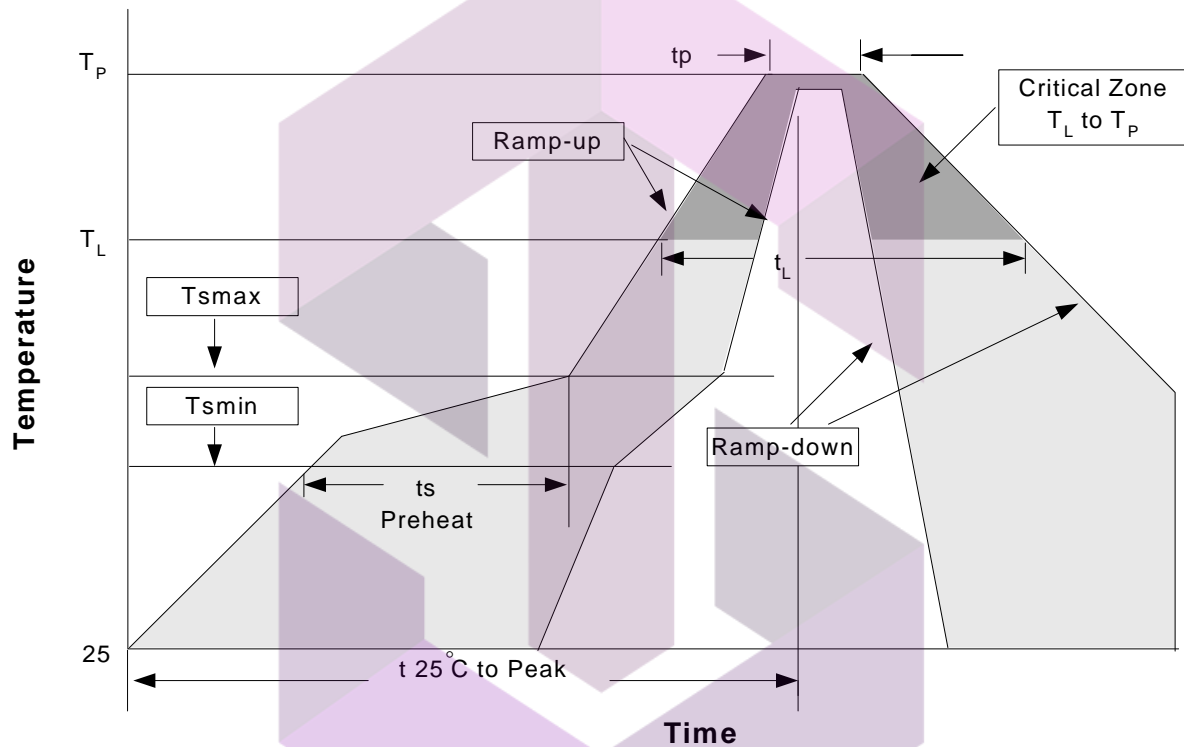
Package Type	Devices Per Reel
SOP- 8	2500

تهیه و توزیع قطعات الکترونیک

Physical Specifications

Terminal Material	Solder-Plated Copper (Solder Material : 90/10 or 63/37 SnPb), 100%Sn
Lead Solderability	Meets EIA Specification RSI86-91, ANSI/J-STD-002 Category 3.

Reflow Condition (IR/Convection or VPR Reflow)



Classification Reflow Profiles

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.	3°C/second max.
Preheat		
- Temperature Min (T_{smin})	100°C	150°C
- Temperature Max (T_{smax})	150°C	200°C
- Time (min to max) (t_s)	60-120 seconds	60-180 seconds
Time maintained above:		
- Temperature (T_L)	183°C	217°C
- Time (t_L)	60-150 seconds	60-150 seconds
Peak/Classification Temperature (T_P)	See table 1	See table 2
Time within 5°C of actual Peak Temperature (t_p)	10-30 seconds	20-40 seconds
Ramp-down Rate	6°C/second max.	6°C/second max.
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

Notes: All temperatures refer to topside of the package. Measured on the body surface.

Classification Reflow Profiles (Cont.)

Table 1. SnPb Eutectic Process – Package Peak Reflow Temperatures

Package Thickness	Volume mm ³ <350	Volume mm ³ ≈350
<2.5 mm	240 +0/-5°C	225 +0/-5°C
≥2.5 mm	225 +0/-5°C	225 +0/-5°C

Table 2. Pb-free Process – Package Classification Reflow Temperatures

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
<1.6 mm	260 +0°C*	260 +0°C*	260 +0°C*
1.6 mm – 2.5 mm	260 +0°C*	250 +0°C*	245 +0°C*
≥2.5 mm	250 +0°C*	245 +0°C*	245 +0°C*

* Tolerance: The device manufacturer/supplier **shall** assure process compatibility up to and including the stated classification temperature (this means Peak reflow temperature +0°C. For example 260°C+0°C) at the rated MSL level.

Reliability Test Program

Test item	Method	Description
SOLDERABILITY	MIL-STD-883D-2003	245°C, 5 SEC
HOLT	MIL-STD-883D-1005.7	1000 Hrs Bias @125°C
PCT	JESD-22-B,A102	168 Hrs, 100%RH, 121°C
TST	MIL-STD-883D-1011.9	-65°C~150°C, 200 Cycles
ESD	MIL-STD-883D-3015.7	VHBM > 2KV, VMM > 200V
Latch-Up	JESD 78	10ms, 1 _{tr} > 100mA

Customer Service

Anpec Electronics Corp.

Head Office :

No.6, Dusing 1st Road, SBIP,
Hsin-Chu, Taiwan, R.O.C.

Tel : 886-3-5642000

Fax : 886-3-5642050

Taipei Branch :

7F, No. 137, Lane 235, Pao Chiao Rd.,
Hsin Tien City, Taipei Hsien, Taiwan, R. O. C.

Tel : 886-2-89191368

Fax : 886-2-89191369

تهیه و توزیع قطعات الکترونیک