DESCRIPTION

N-channel Enhancement MOSFET

FEATURES

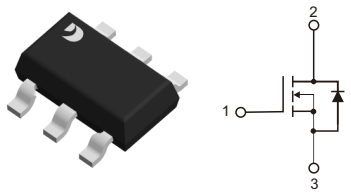
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- Halongen Free."Green" Device(Note1)
- Qualified to AEC-Q101 Standards for High Reliability

APPLICATION

- Load Switch
- Power Management

PINNING

PIN	DESCRIPTION
3	GATE
1,2,5,6	DRAIN
4	SOURCE



Simplified outline SOT-26 and symbol

Automotive Grade

MAXIMUMRATINGS (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	40	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current(Note2) TA=25°C	I_D	6.2	A
Continuous Drain Current(Note2) TA=100°C	I_D	4.4	A
Pulsed Drain Current	I_{DM}	25	A
Power Dissipation(Note2)	P_D	1.34	W
Thermal Resistance-Junction to Ambient(Note2)	$R_{\theta JA}$	93	K/W
Operation Junction Temperature	T_j	-55 to +150	°C
Storage Temperature	T_{stg}	-55 to +150	°C
Ambient Temperature	T_{amb}	-65 to +150	°C
Electrostatic Discharge Voltage(Note3)	V_{ESD}	500	V

Notes: 1.Halongfen free "GREEN"products are defined ai those which contain <900ppm bromine, <900ppm chlorine(<1500ppm total Br+Cl) and <1000ppm antimony compounds.
2.Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated, mounting pad for drain 6 cm^2
3.Measured between all pins.

ELECTRICAL CHARACTERISTICS(Ta = 25°C unless otherwise noted.)

Parameter		Symbol	Test conditions	Min	Typ	Max	Unit
OFF Characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS} = 0V,I_D = 250uA	40			V
Drain-Source Leakage Current		I_{DSS}	V_{DS} = 40V,V_{GS} = 0V			1	uA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS} = 20V,V_{DS} = 0V			100	nA
	Reverse		V_{GS} = -20V,V_{DS} = 0V			-100	
On Characteristics							
Gate Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS},I_D = 250uA	1.3	1.7	2.7	V
Static Drain-Source On-State Resistance		$R_{DS(on)}$	V_{GS} = 10V,I_D = 6.2A		19	23	mΩ
			V_{GS} = 10V,I_D = 6.2A,Tj=150°C		36	44	
			V_{GS} = 4.5V,I_D = 5.4A		23	30	
Forward Transconductance		g_{FS}	V_{DS} = 10V,I_D = 6.2A		33		S
Dynamic Characteristics							
Input Capacitance		C_{ISS}	V_{DS} = 20V V_{GS} = 0V f =1MHz		582		pF
Output Capacitance		C_{OSS}			101		
Reverse Transfer Capacitance		C_{RSS}			58		
Switching Characteristics							
Total Gate Charge		Q_g	V_{DS} = 20V V_{GS} = 10V I_D = 6.2A		11	17	nC
Gate-Source Charge		Q_{gs}			2		
Gate-Drain Charge		Q_{gd}			2.4		
Switching Characteristics							
Turn-On Delay Time		$t_{d(on)}$	V_{DS}=20V, R_{GEN}=6Ω, V_{GS}=10V, I_D=6.2A		2		ns
Turn-On Rise Time		t_{rr}			5		
Turn-Off Delay Time		$t_{d(off)}$			12		
Turn-Off Fall Time		t_f			5		
Body Diode Characteristics							
Drain-Source Diode Forward Voltage		V_{SD}	I_S = 1.7A,V_{GS} = 0V		0.8	1.2	V
Gate Resistance		R_g	f=1MHz		1.8		Ω
Diode Forward Current(Note1)		I_S				1.7	A
Reverse Recovery Charge		t_{rr}	dIs/dt=-100A/μs,V_{GS}=0V I_S=2.3A,V_{DS}=20V		12.8		nS
Reverse Recovery Time		Q_{rr}			5.4		nC

Typical Electrical and Thermal Characteristics

Fig 1. Normalized total power dissipation as a function of junction temperature

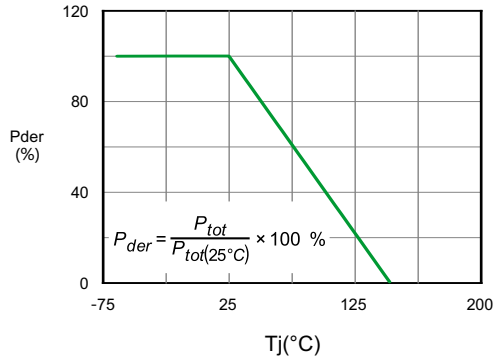


Fig 2. Normalized continuous drain current as a function of junction temperature

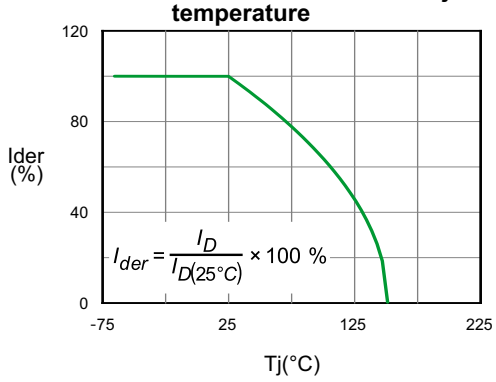


Fig 3. Output characteristics: drain current as a f unction of drain -source voltage; typical values

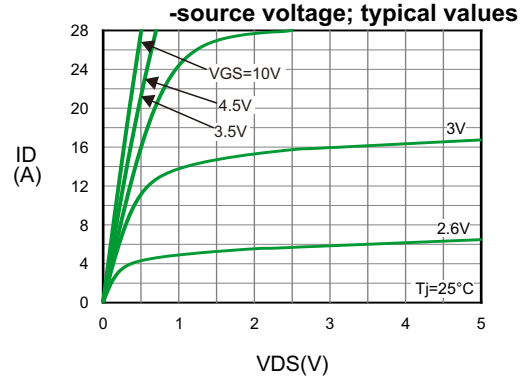


Fig 4. Sub-threshold drain current as a function of gate-source voltage

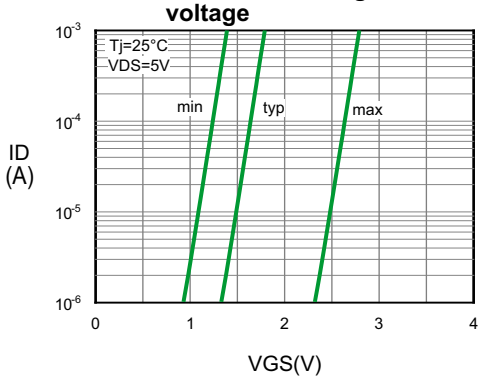


Fig 5. Safe operating area; junction to ambient; continuous and peak drain currents as a function of drain source voltage

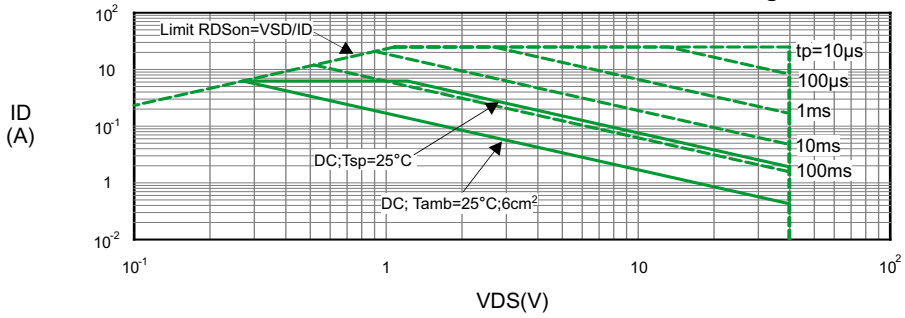
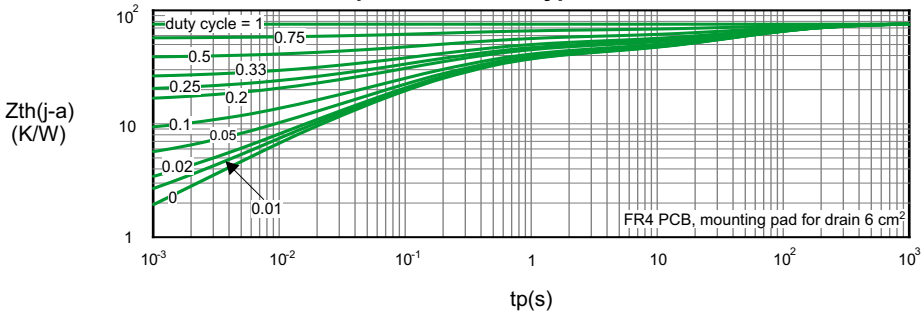


Fig 6. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



Typical Electrical and Thermal Characteristics

Fig 7. Drain-source on-state resistance as a function of drain current; typical values

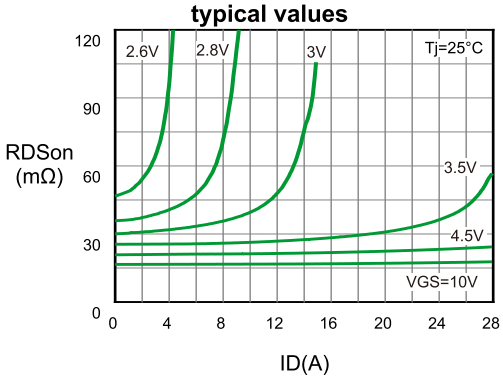


Fig 8. Drain-source on-state resistance as a function of gate-source voltage; typical values

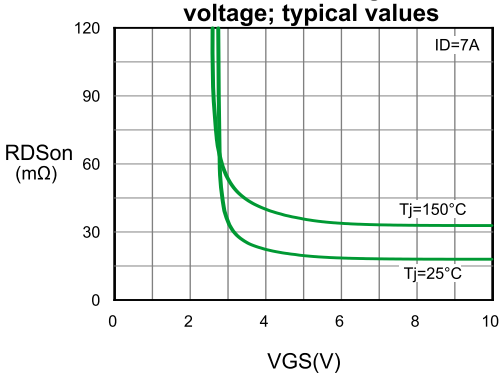


Fig 9. Transfer characteristics: drain current as a function of gate-source voltage; typical values

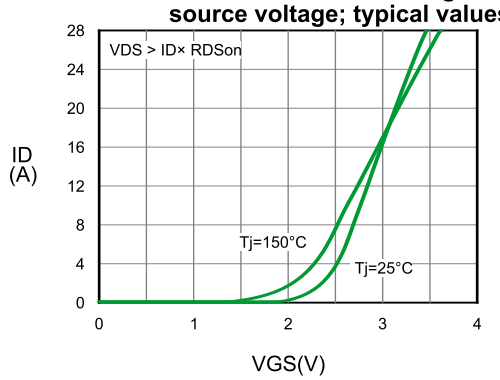


Fig 10. Normalized drain-source on-state resistance as a function of junction temperature; typical values

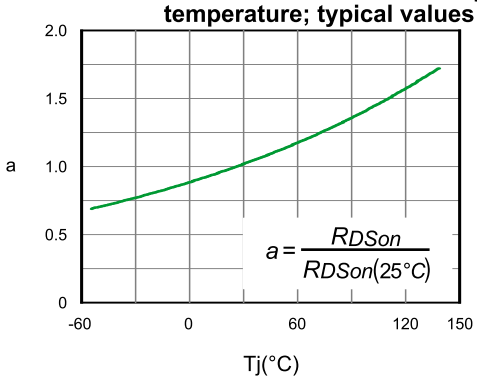


Fig 11. Gate-source threshold voltage as a function of junction temperature

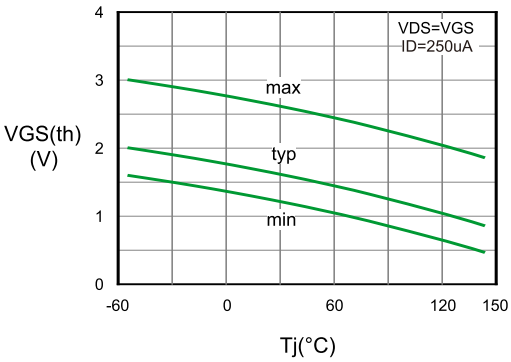


Fig 12. Input, output and reverse transfer capacitances as a function of drain-source voltage; typical values

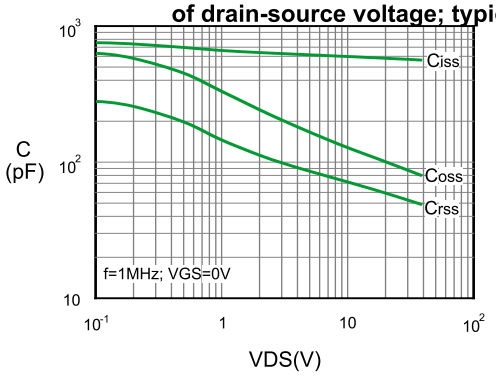


Fig. 13. Gate-source voltage as a function of gate charge; typical values

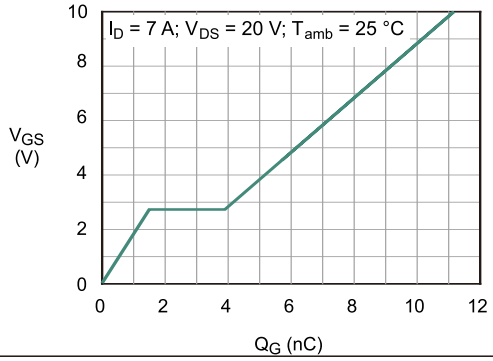
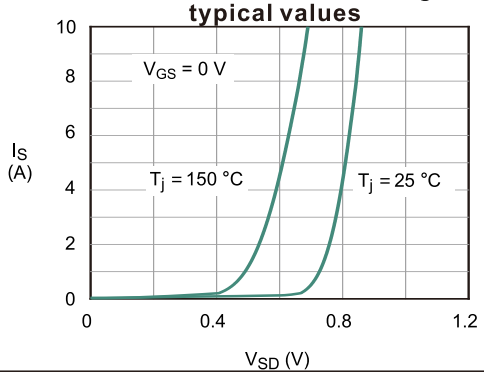
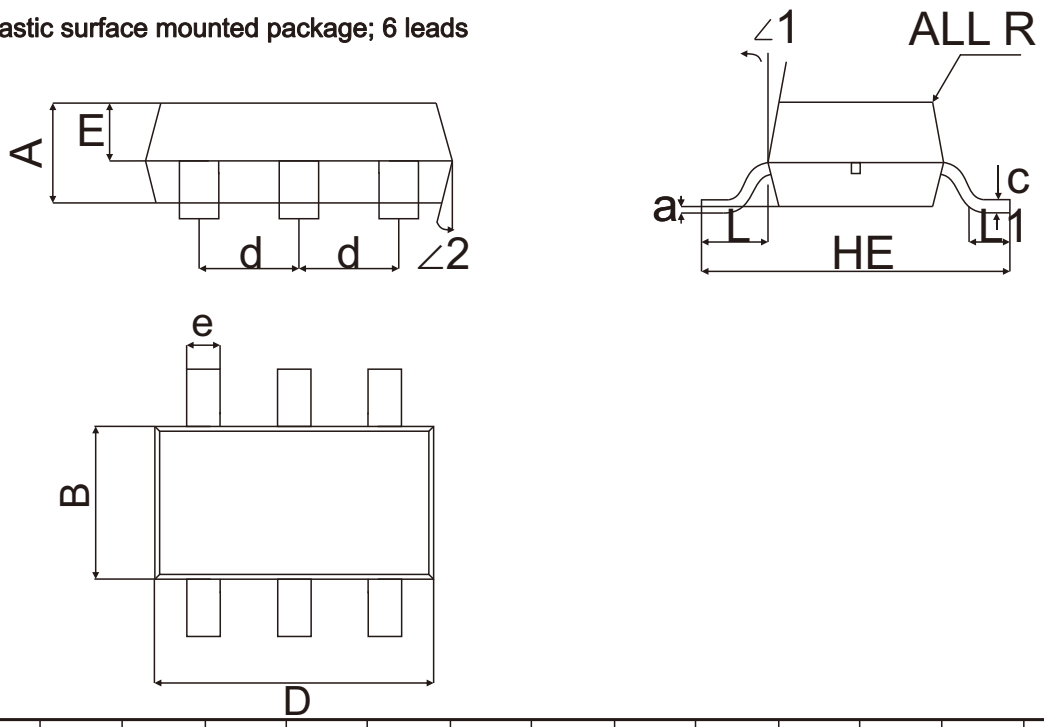


Fig. 14. Source current as a function of source-drain voltage; typical values



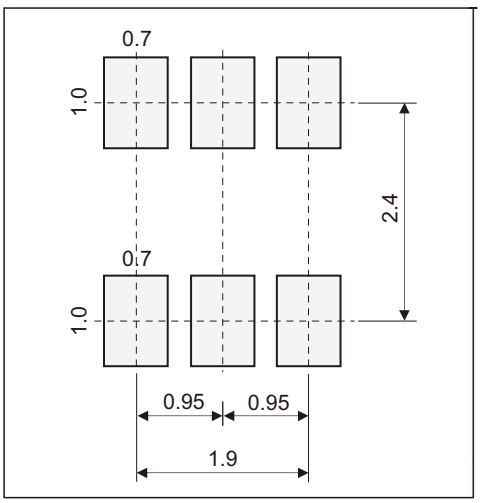
PACKAGE OUTLINE

Plastic surface mounted package; 6 leads



Unit		A	B	C	HE	D	d	E	e	L	L1	a	R	∠1	∠2
mm	max	1.05	1.80	0.20	2.90	3.12	1.00	0.65	0.40	0.70	0.60	0.2 (ref)	R0.1 (ref)	12°	10°
	typ	0.95	1.60	0.15	2.80	2.92	0.95	0.55	0.35	0.60	/				
	min	0.85	1.40	0.10	2.70	2.72	0.90	0.45	0.30	0.50	0.20				
mil	max	41	71	8	114	123	39	26	16	28	24	8 (ref)	R4 (ref)		
	typ	37	63	6	110	115	37	22	14	24	/				
	min	33	55	4	106	107	35	18	12	20	8				

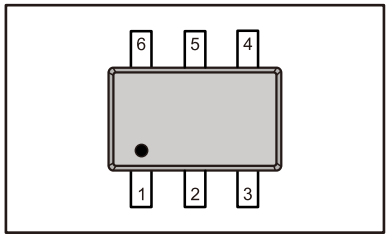
The recommended mounting pad size



Marking

Type number	Marking code
AT-NM6240WC	624

Pin Point



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