



Description

This new generation MOSFET is designed to minimize the on-state resistance ($R_{DS(ON)}$), yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

Applications

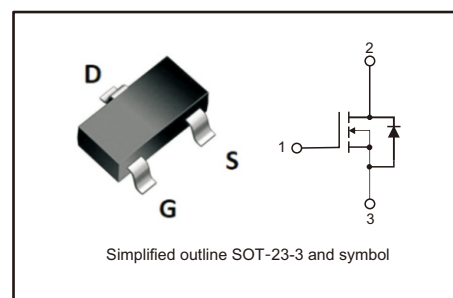
- DC-DC Converters
- Power Management Functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.

Features

- Low On-Resistance
- low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Small Surface Mount Package
- Totally Lead-Free & Fully RoHs Compliant(Note 1)
- Halogen and Antimony Free. "Green" Device (Note2)

PINNING

PIN	DESCRIPTION
1	GATE
2	DRAIN
3	SOURCE



Absolute Maximum Ratings (TA=25°C, unless otherwise specified)

Parameter	Symbols	Ratings	Units
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	3.7	A
Power Dissipation	P_D	1.4	W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	55	°C/W
Operation Junction Temperature And Storage Temperature	T_j, T_{stg}	-55 ~ +150	°C

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. Halogen and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br +Cl) and <1000ppm antimony compounds.

Electrical Characteristics (TA=25°C, unless otherwise specified)

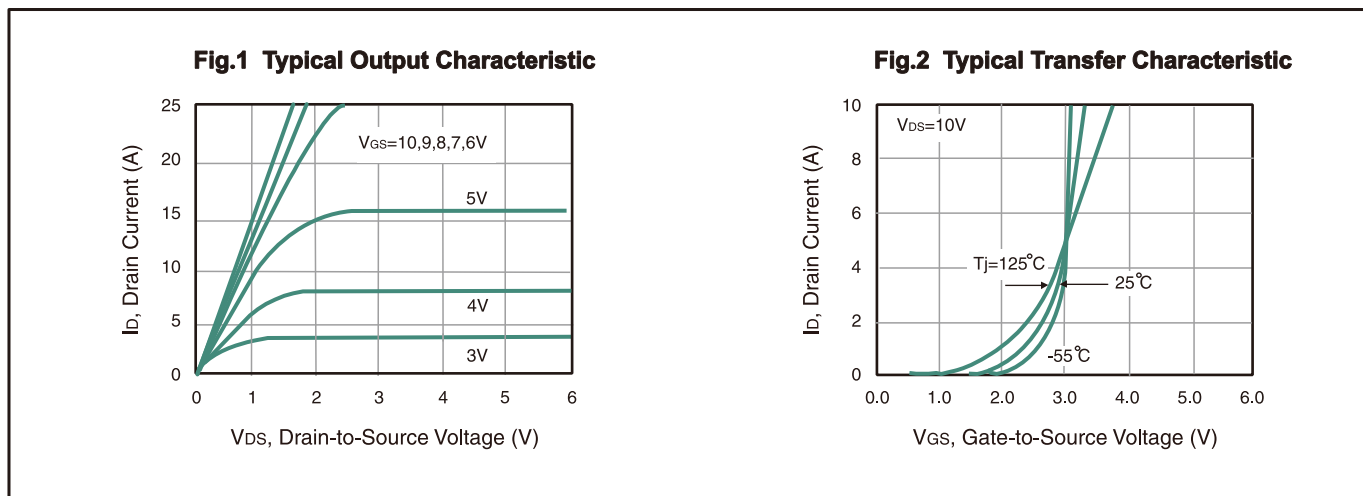
Parameter Units	Symbols	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	B_{VDSS}	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}			0.1	μA
	Reverse				$V_{GS} = -20V, V_{DS} = 0V$	



Electrical Characteristics (TA=25°C, unless otherwise specified)

Parameter Units	Symbols	Test Conditions	Min	Typ	Max	Units
On Characteristics						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		3.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 3.9A$			100	mΩ
		$V_{GS} = 4.5V, I_D = 3.7A$			120	
Continuous Current	I_S				2.5	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_S = 1.5A, V_{GS} = 0V$			1.2	V
Forward Transconductance	g_{FS}	$V_{DS} = 5V, I_D = 3.7A$	3	9		mS
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS} = 25V,$ $V_{GS} = 0V,$ $f = 1.0MHz$			800	pF
Output Capacitance	C_{OSS}				250	
Reverse Transfer Capacitance	C_{RSS}				60	
Total Gate Charge	Q_g	$V_{DS} = 40V,$ $V_{GS} = 10V,$ $I_D = 3.7A$		9	12	nC
Gate-Source Charge	Q_{gs}			2		
Gate-Drain Charge	Q_{gd}			6		
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 25V,$ $I_D = 1A,$ $R_G = 25\Omega,$		15	20	ns
Turn-On Rise Time	t_r			18	20	
Turn-Off Delay Time	$t_{d(off)}$			40	50	
Turn-Off Fall Time	t_f			16	20	

TYPICAL ELECTRICAL CHARACTERISTICS





TYPICAL ELECTRICAL CHARACTERISTICS

Fig.3 Capacitance Characteristic

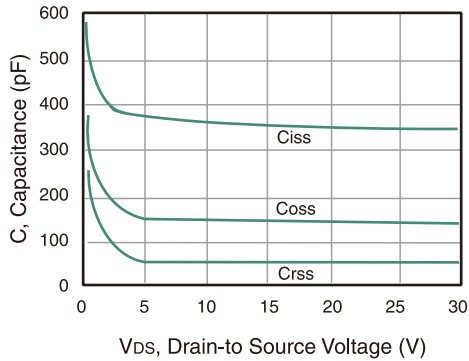


Fig.4 On-Resistance Variation with Drain Current and Temperature

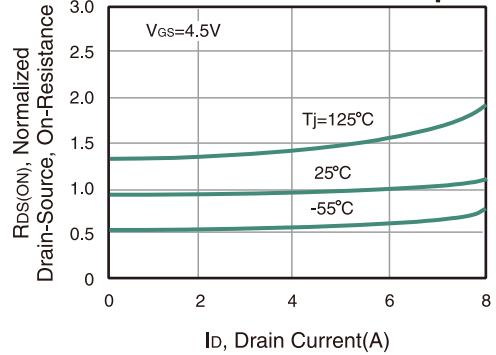


Fig.5 Gate Threshold Variation with Temperature

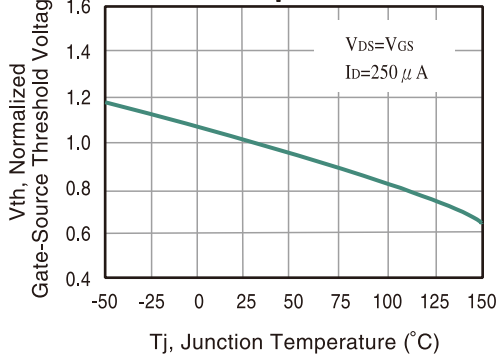


Fig.6 Breakdown Voltage Variation with Temperature

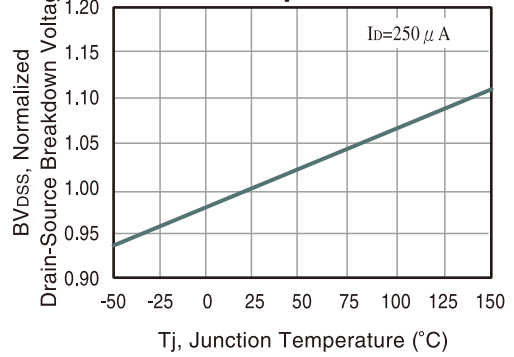


Fig.7 Transconductance Variation with Drain Current

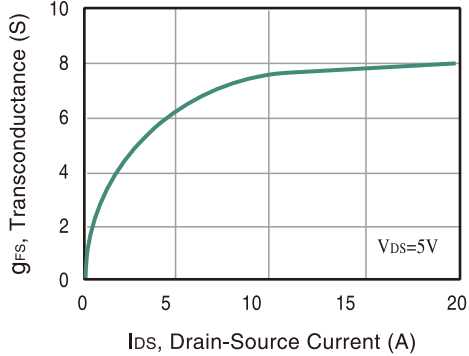


Fig.8 Body Diode Forward Voltage Variation with Source Current

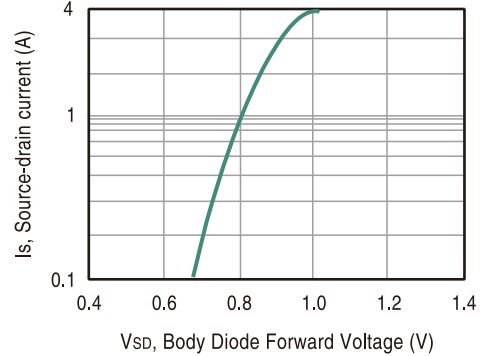


Fig.9 Gate Charge

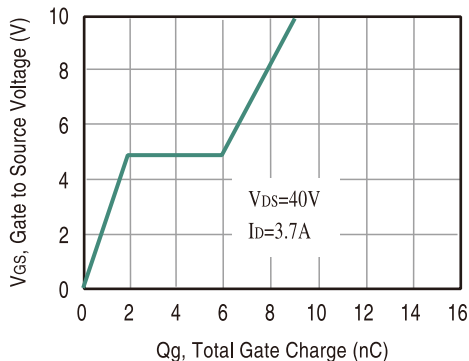
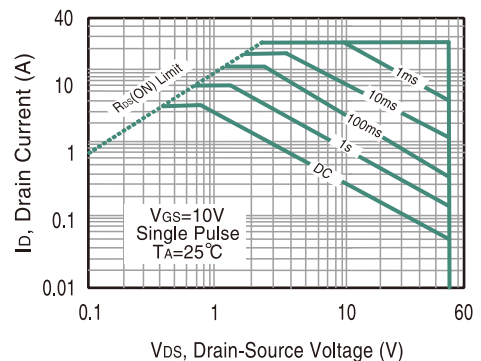
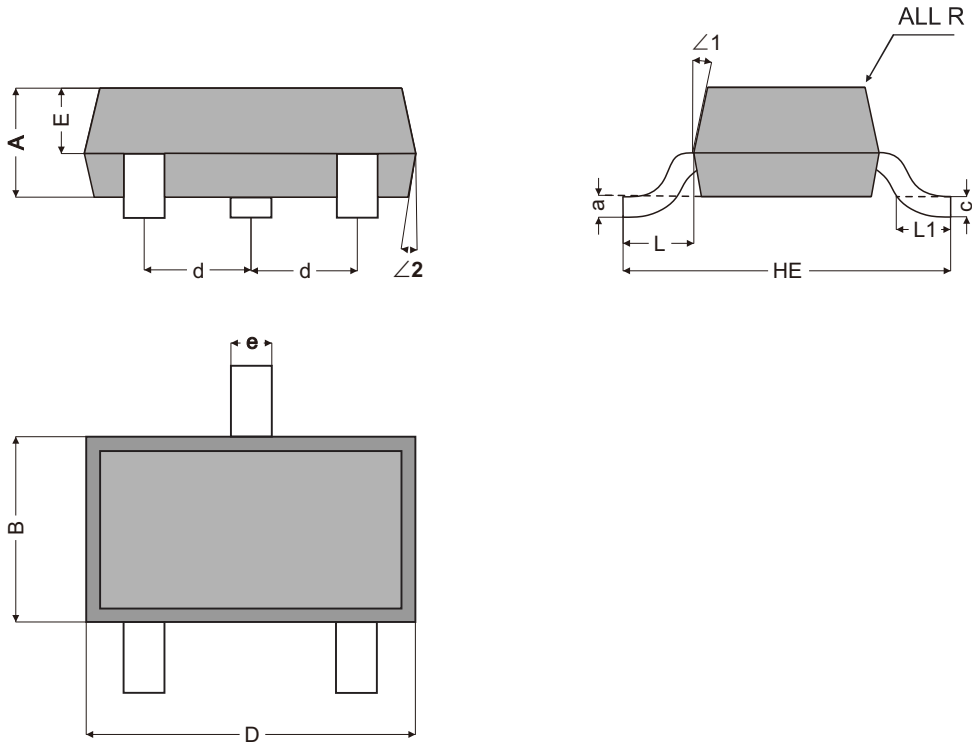


Fig.10 Maximum Safe Operating Area



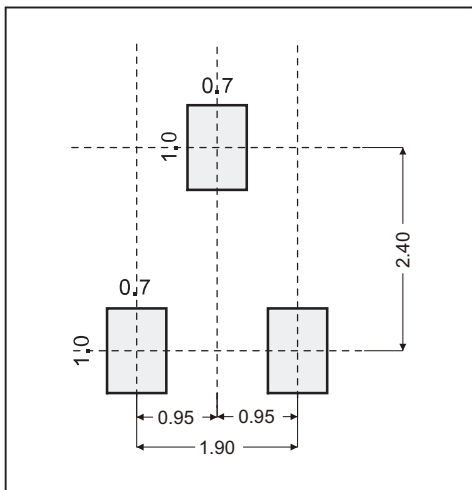


SOT23-3 Package Outline Dimensions



Unit		A	B	C	HE	D	d	E	e	L	L1	a	R	$\angle 1$	$\angle 2$
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)	12°	10°
	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
NM3760WR	3760



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