P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
-30V	-10A	13 @ V_{GS} = -20V 14 @ V_{GS} = -10V 24 @ V_{GS} = -4.5V

FEATURES

- Super high dense cell design for low $R_{DS(ON)}$).
- Rugged and reliable.
- Surface Mount Package.

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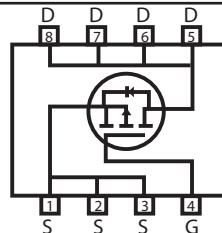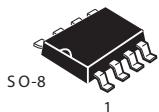
ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	- 30	V
Gate-Source Voltage	V_{GS}	± 25	V
Drain Current-Continuous [a] @ T_J=125°C	I_D	- 10	A
-Pulsed [b]	I_{DM}	- 50	A
Drain-Source Diode Forward Current [a]	I_S	-1.7	A
Maximum Power Dissipation [a]	P_D	2.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient [a]	$R_{\theta JA}$	50	°C/W

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ELECTRICAL CHARACTERISTICS (T$_A$ =25 $^\circ$C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ[c]	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV$_{DSS}$	V$_{GS}$ =0V, I$_D$=-250uA	-30			V
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$ =-24V, V$_{GS}$= 0V			-1	uA
Gate-Body Leakage	I$_{GSS}$	V$_{GS}$ =±25V, V$_{DS}$ =0V			±100	nA
ON CHARACTERISTICS [b]						
Gate Threshold Voltage	V$_{GS(th)}$	V$_{DS}$ =V$_{GS}$, I$_D$ = -250uA	-1	-1.8	-2.5	V
Drain-Source On-State Resistance	R$_{DS(ON)}$	V$_{GS}$ =-20V, I$_D$ =-10A		9	13	m-ohm
		V$_{GS}$ = -10V, I$_D$ =-10A		10	14	m-ohm
		V$_{GS}$ = -4.5V, I$_D$ =-10A		15	24	m-ohm
On-State Drain Current	I$_{D(ON)}$	V$_{DS}$ = -5V, V$_{GS}$ = -10V	30			A
Forward Transconductance	g$_{FS}$	V$_{DS}$ = -5V, I$_D$ =-10A		20		S
DYNAMIC CHARACTERISTICS [c]						
Input Capacitance	C$_{ISS}$	V$_{DS}$ = -15V, V$_{GS}$ = 0V f =1.0MHz		2963		pF
Output Capacitance	C$_{OSS}$			641		pF
Reverse Transfer Capacitance	C$_{RSS}$			276		pF
SWITCHING CHARACTERISTICS [c]						
Turn-On Delay Time	t$_{D(ON)}$	V$_{DD}$ = -15V R$_L$=1.25ohm V$_{GS}$ = -10V R$_{GEN}$=6ohm		4.9		ns
Rise Time	t$_r$			8.8		ns
Turn-Off Delay Time	t$_{D(OFF)}$			27.1		ns
Fall Time	t$_f$			15.5		ns
Total Gate Charge	Q$_g$	V$_{DS}$ = -15V, I$_D$ = -10A, V$_{GS}$ = -10V		60.5		nC
Gate-Source Charge	Q$_{gs}$			8.3		nC
Gate-Drain Charge	Q$_{gd}$			13.7		nC

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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ [C]	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS [b]						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, Is =-1.7A		-0.73	-1.2	V

Notes

a. Surface Mounted on FR4 Board, t <=10sec.

b. Pulse Test: Pulse Width<=300us, Duty Cycle<= 2%.

c. Guaranteed by design, not subject to production testing.

Figure 1. Output Characteristics

Figure 2. Transfer Characteristics

Figure 3. Capacitance

Figure 4. On-Resistance Variation with Temperature
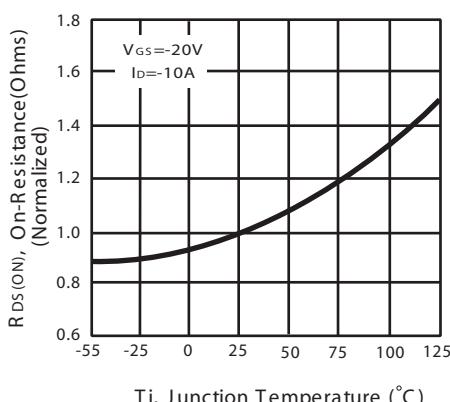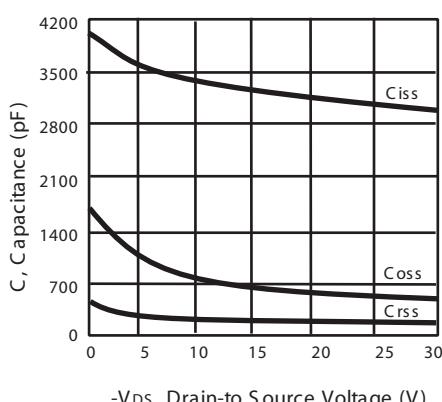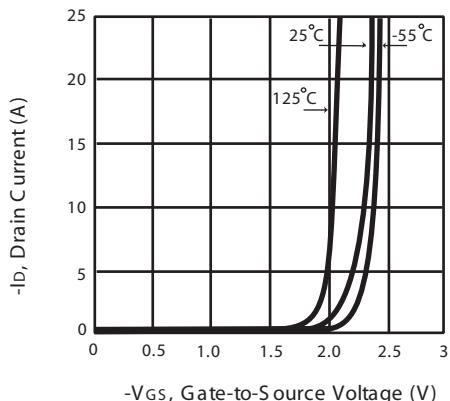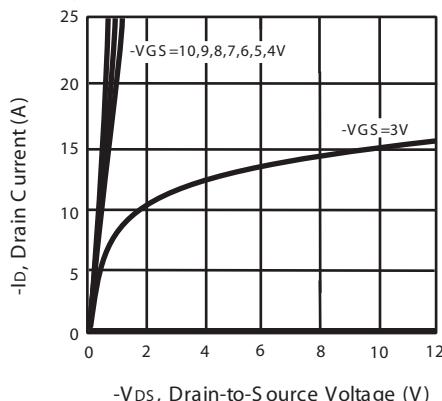
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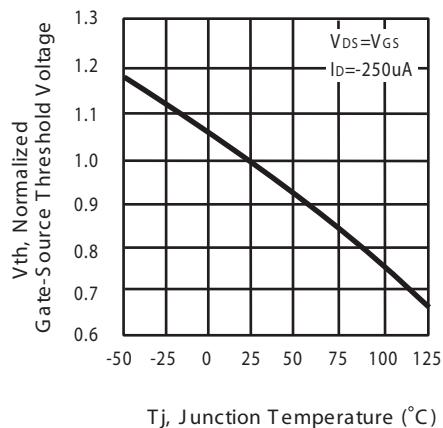
Figure 5. Gate Threshold Variation with Temperature
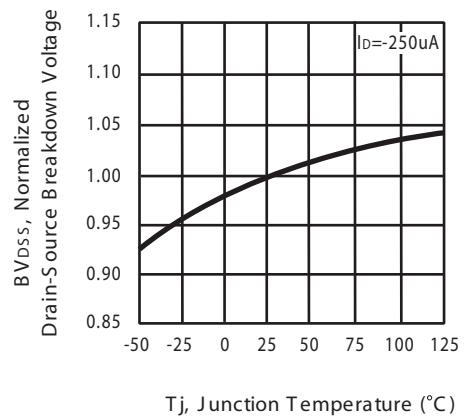
Figure 6. Breakdown Voltage Variation with Temperature
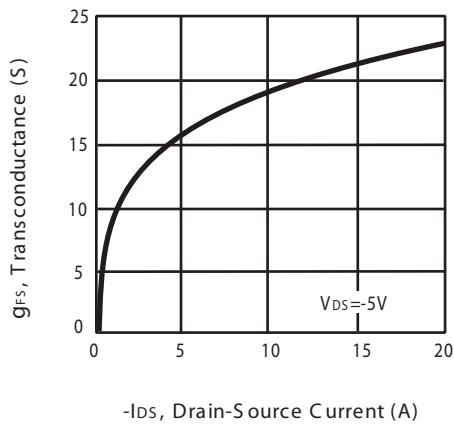
Figure 7. Transconductance Variation with Drain Current
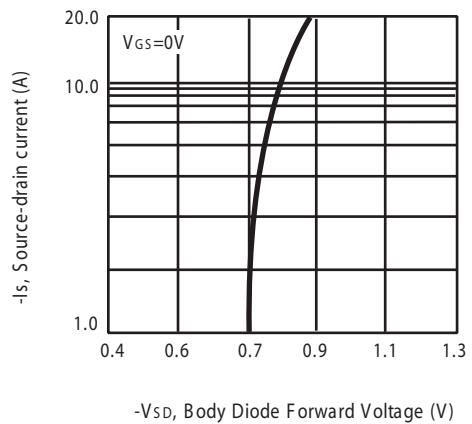
Figure 8. Body Diode Forward Voltage Variation with Source Current
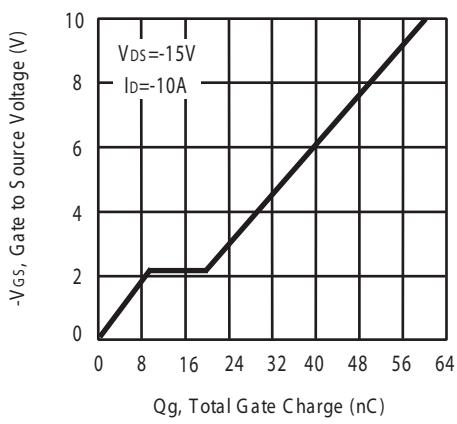
Figure 9. Gate Charge
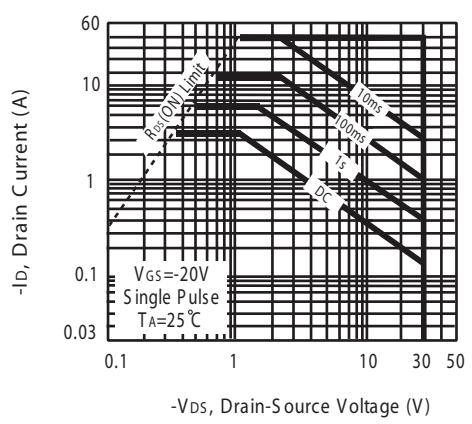
Figure 10. Maximum Safe Operating Area

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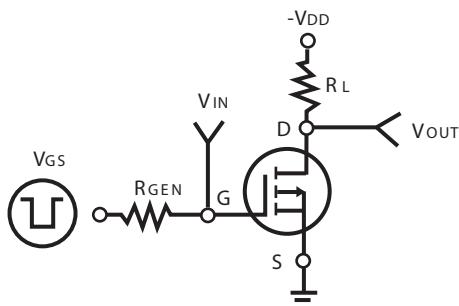
Figure 11. Switching Test Circuit
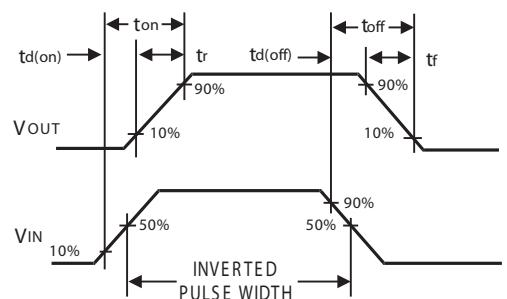
Figure 12. Switching Waveforms
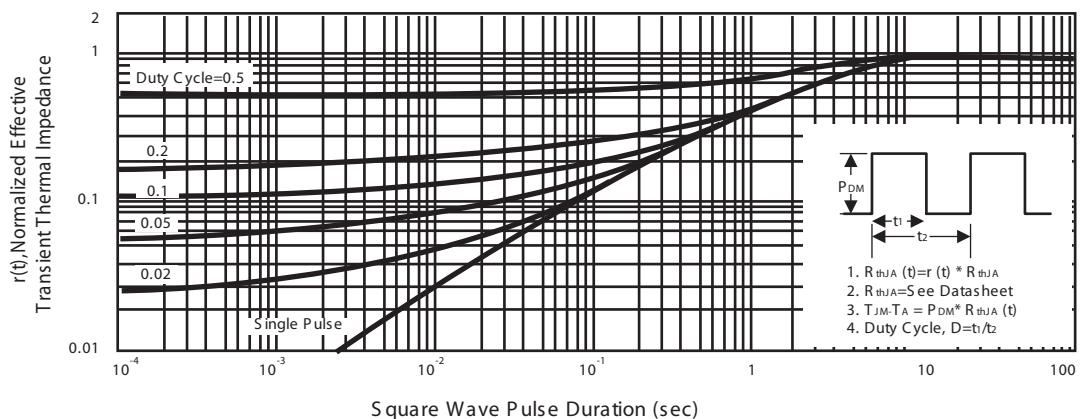
Figure 13. Normalized Thermal Transient Impedance Curve

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PACKAGE OUTLINE DIMENSIONS

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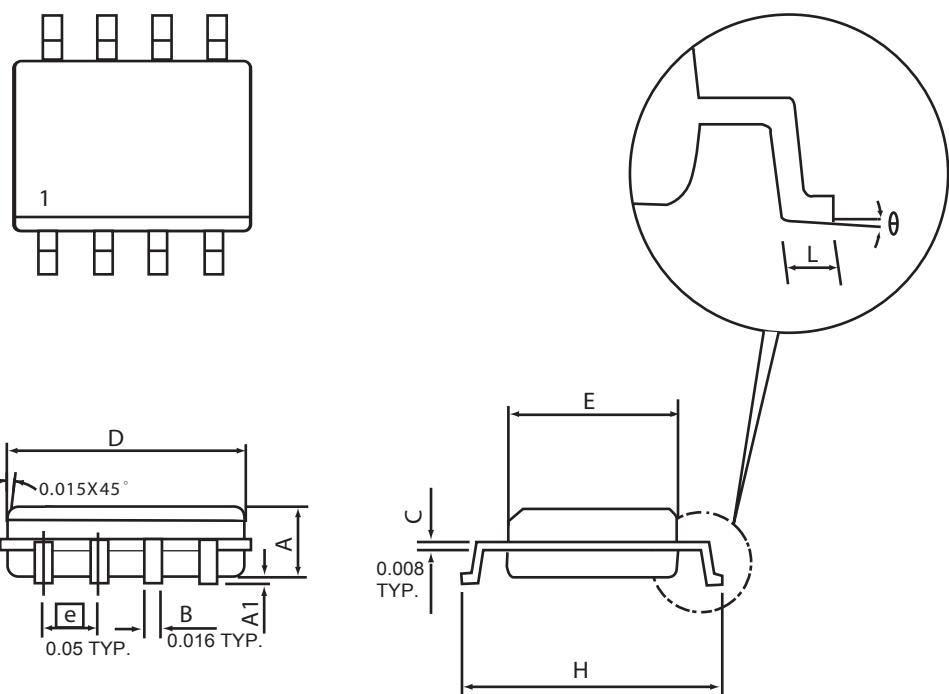
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
θ	0°	8°	0°	8°

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SO-8 Tape and Reel Data

SO-8 Carrier Tape
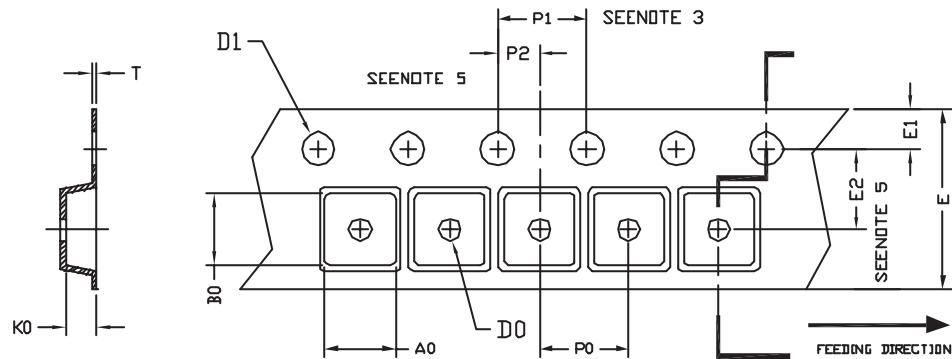
unit:㎜

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOP 8N 150㎖	6.40	5.20	2.10	ϕ 1.5 (MIN)	ϕ 1.5 + 0.1 - 0.0	12.0 ±0.3	1.75	5.5 ±0.05	8.0	4.0	2.0 ±0.05	0.3 ±0.05

SO-8 Reel
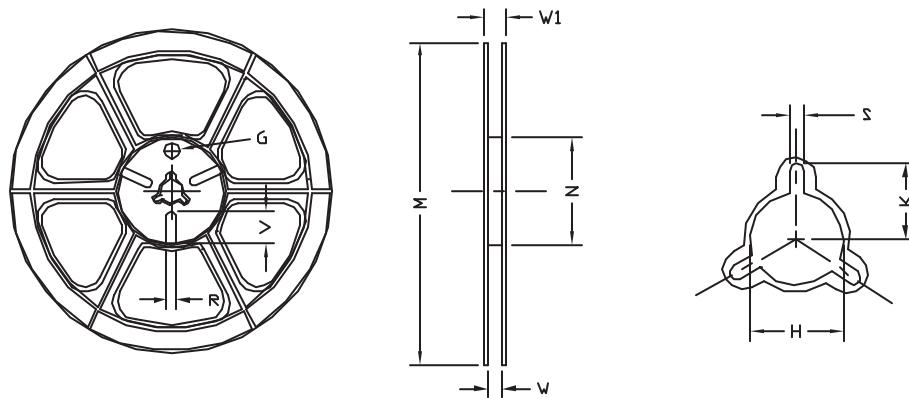
UNIT:㎜

TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
12 ㎜	ϕ 330	330 ± 1	62 ±1.5	12.4 + 0.2	16.8 - 0.4	ϕ 12.75 + 0.15	---	2.0 ±0.15	---	---	---