



Dual Enhancement Mode Field Effect Transistor (N and P Channel)

PRODUCT SUMMARY (N-Channel)		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
55V	5A	50 @ V _{Gs} = 10V
		70 @ V _{Gs} = 4.5V

PRODUCT SUMMARY (P-Channel)		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
-55V	- 3.5A	80 @ V _{Gs} = -10V
		100 @ V _{Gs} = -4.5V



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

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage Rating		V _{spike} ^d	60	-60	V
Drain-Source Voltage		V _{DS}	55	-55	V
Gate-Source Voltage		V _{GS}	±20	±20	V
Drain Current-Continuous ^a @ T _a	25°C	I _D	5	- 3.5	A
	70°C		4.2	- 2.8	A
-Pulsed ^b		I _{DM}	22	- 18	A
Drain-Source Diode Forward Current ^a		I _S	1.7	-1.7	A
Maximum Power Dissipation ^a	T _a = 25°C	P _D	2		W
	T _a =70°C		1.44		
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150		°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	R _{θJA}	62.5	°C/W
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N-Channel ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	55			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=44V, V_{GS}=0V$			1	μA
Gate-Body Leakage	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.7	3.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=4.5A$		34	50	m ohm
		$V_{GS}=4.5V, I_D=4A$		45	70	m ohm
On-State Drain Current	$I_{D(on)}$	$V_{DS}=5V, V_{GS}=10V$	15			A
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=4.5A$		15		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V$ $f=1.0MHz$		930		pF
Output Capacitance	C_{oss}			85		pF
Reverse Transfer Capacitance	C_{riss}			50		pF
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1.0MHz$		3.9		ohm
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=30V$ $I_D=1A$ $V_{GS}=10V$ $R_{GEN}=6\text{ ohm}$		17		ns
Rise Time	t_r			14		ns
Turn-Off Delay Time	$t_{D(off)}$			29		ns
Fall Time	t_f			5		ns
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=4.5A, V_{GS}=10V$		20		nC
		$V_{DS}=30V, I_D=4.5A, V_{GS}=4.5V$		9.5		nC
Gate-Source Charge	Q_{gs}	$V_{DS}=30V, I_D=4.5A$		2.9		nC
Gate-Drain Charge	Q_{gd}	$V_{GS}=10V$		4.5		nC

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P-Channel ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-55			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -44V, V_{GS} = 0V$			-1	μA
Gate-Body Leakage	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.7	-3.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -3A$		60	80	m ohm
		$V_{GS} = -4.5V, I_D = -2A$		80	100	m ohm
On-State Drain Current	$I_{D(ON)}$	$V_{DS} = -5V, V_{GS} = -10V$	10			A
Forward Transconductance	g_{FS}	$V_{DS} = -5V, I_D = -3A$		8.5		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C_{ISS}	$V_{DS} = -30V, V_{GS} = 0V$ $f = 1.0MHz$		900		pF
Output Capacitance	C_{OSS}			85		pF
Reverse Transfer Capacitance	C_{RSS}			58		pF
Gate resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1.0MHz$		4.2		ohm
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD} = -30V$ $R_L = 30\text{ ohm}$ $V_{GS} = -10V$ $R_{GEN} = 6\text{ ohm}$		13		ns
Rise Time	t_r			16		ns
Turn-Off Delay Time	$t_{D(OFF)}$			84		ns
Fall Time	t_f			24		ns
Total Gate Charge	Q_g	$V_{DS} = -30V, I_D = -3A, V_{GS} = -10V$		18.5		nC
		$V_{DS} = -30V, I_D = -3A, V_{GS} = -4.5V$		9.1		nC
Gate-Source Charge	Q_{gs}	$V_{DS} = -30V, I_D = -3A$		1.8		nC
Gate-Drain Charge	Q_{gd}	$V_{GS} = -10V$		4.5		nC

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

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit	
DRAIN-SOURCE DIODE CHARACTERISTICS^b							
Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}, I_s = 1.7\text{A}$	N-Ch		0.8	1.2	V
		$V_{GS} = 0\text{V}, I_s = -1.7\text{A}$	P-Ch		-0.78	-1.2	

Notes

- a. Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.
 - b. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.
 - c. Guaranteed by design, not subject to production testing.
 - d. Guaranteed when external $R_g = 6 \text{ohm}$ and $t_f < t_f \text{ max}$.
- N-Channel

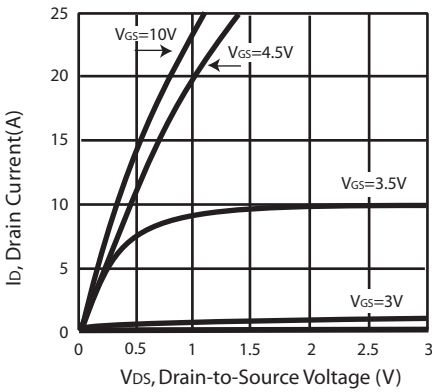


Figure 1. Output Characteristics

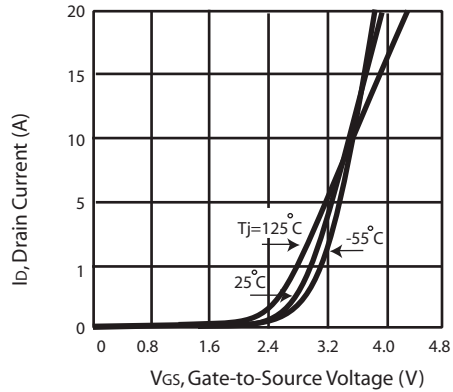


Figure 2. Transfer Characteristics

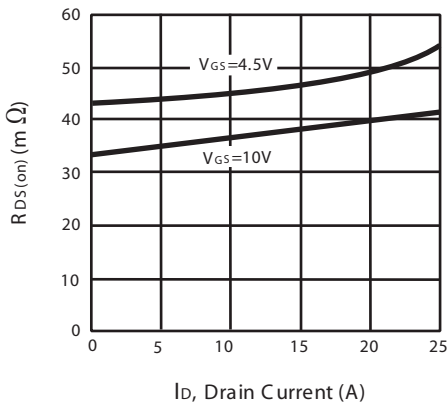


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

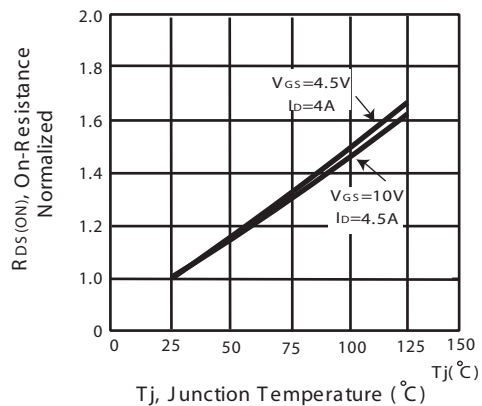


Figure 4. On-Resistance Variation with Drain Current and Temperature

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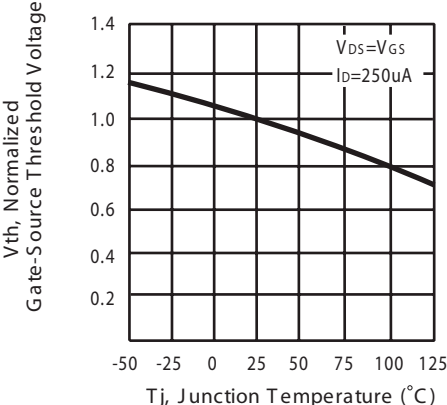


Figure 5. Gate Threshold Variation with Temperature

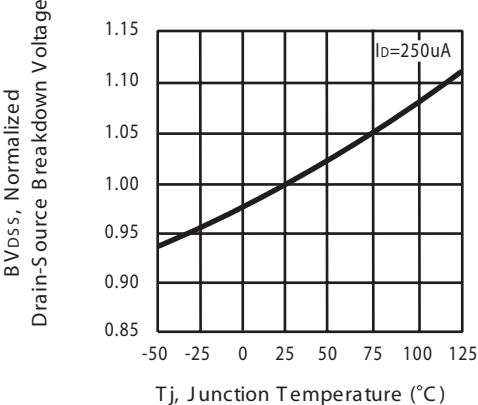


Figure 6. Breakdown Voltage Variation with Temperature

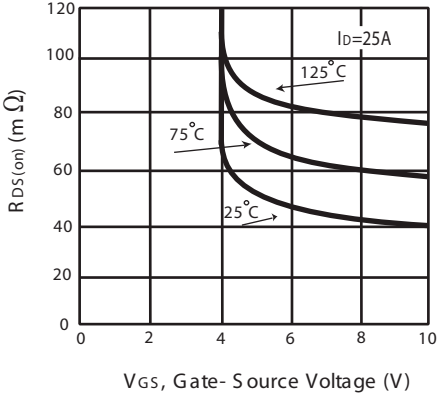


Figure 7. On-Resistance vs. Gate-Source Voltage

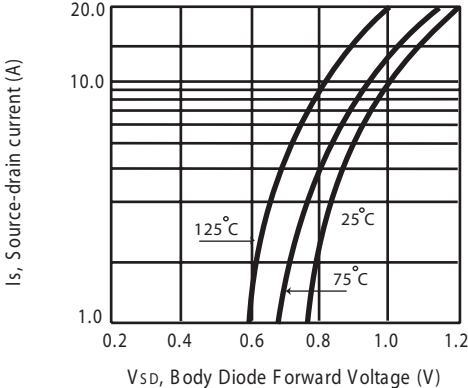


Figure 8. Body Diode Forward Voltage Variation with Source Current

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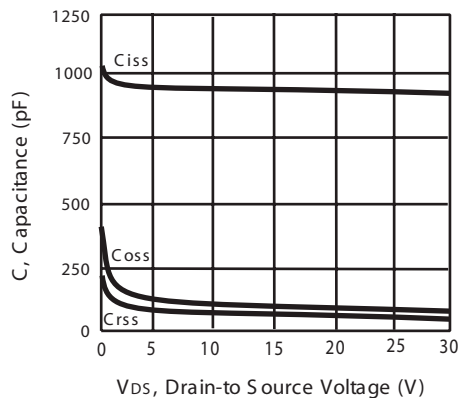


Figure 9. Capacitance

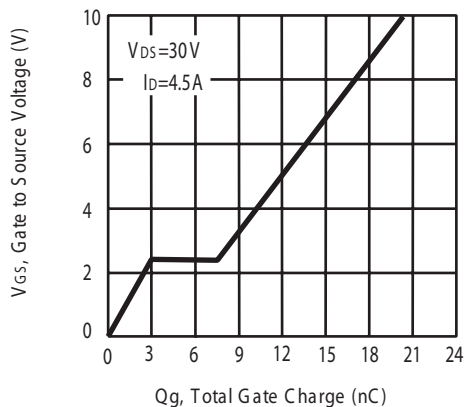


Figure 10. Gate Charge

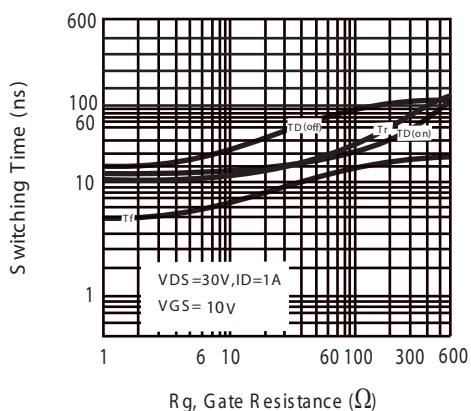


Figure 11. switching characteristics

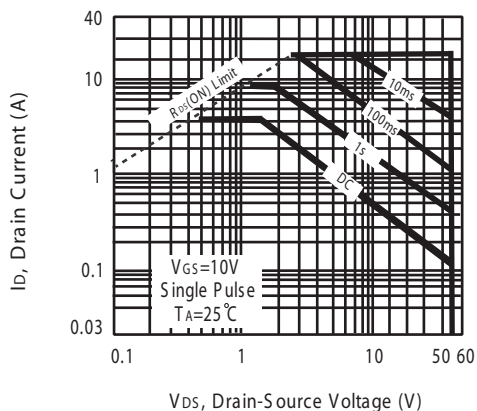


Figure 12. Maximum Safe Operating Area

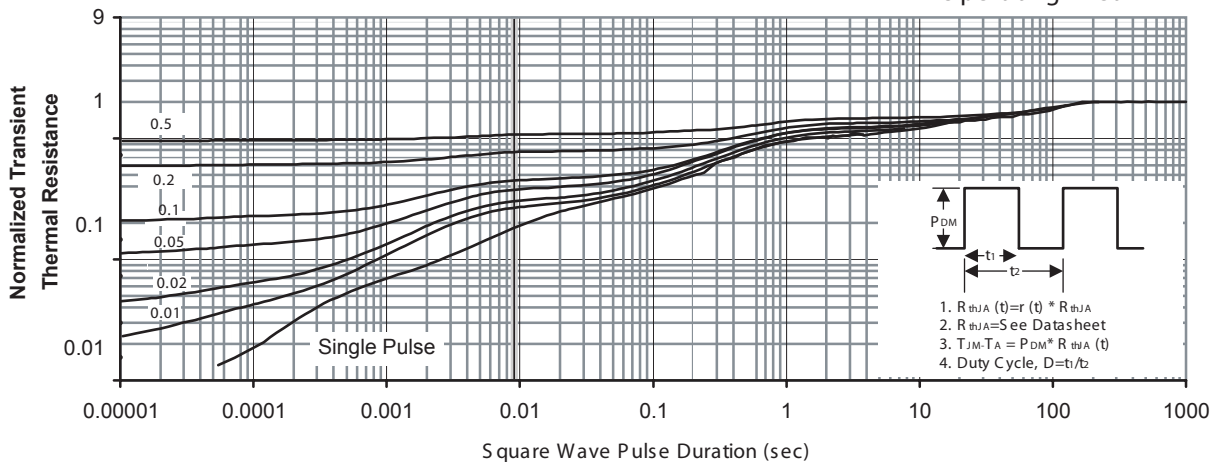


Figure 13. Normalized Thermal Transient Impedance Curve

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P-Channel

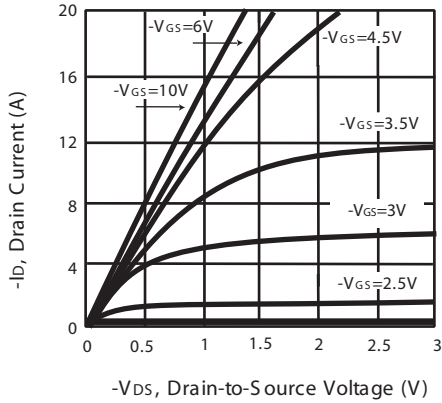


Figure 1. Output Characteristics

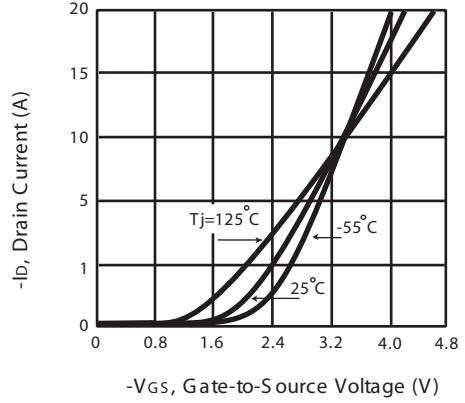


Figure 2. Transfer Characteristics

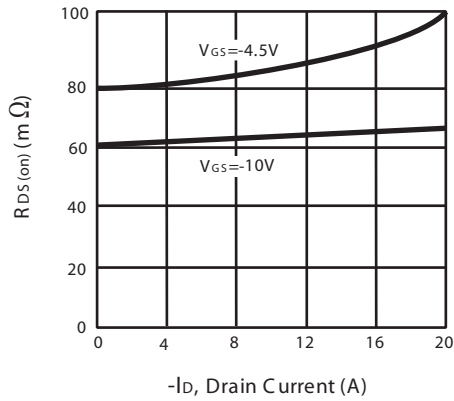


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

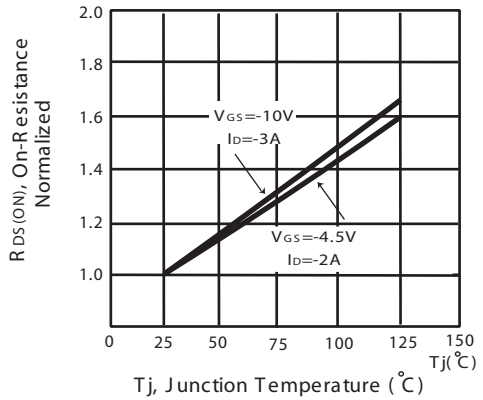


Figure 4. On-Resistance Variation with Drain Current and Temperature

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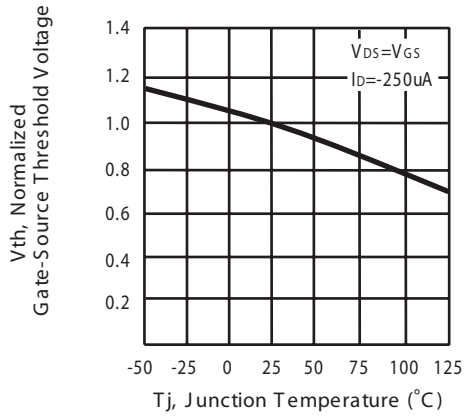


Figure 5. Gate Threshold Variation with Temperature

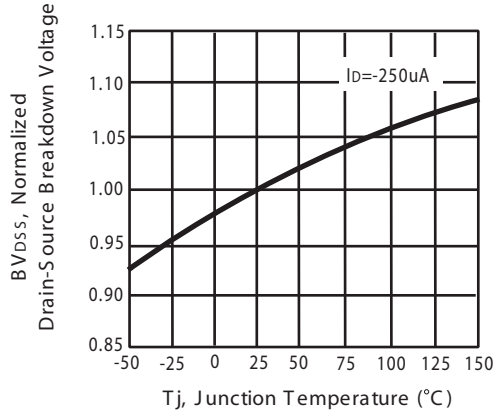


Figure 6. Breakdown Voltage Variation with Temperature

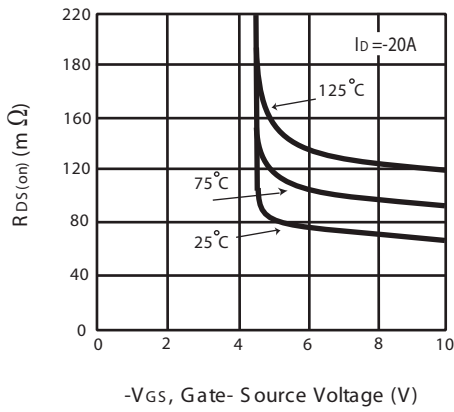


Figure 7. On-Resistance vs. Gate-Source Voltage

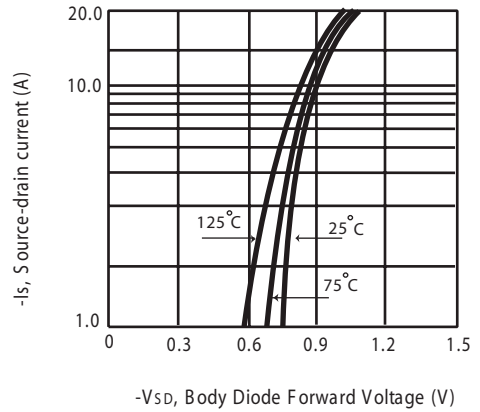


Figure 8. Body Diode Forward Voltage Variation with Source Current

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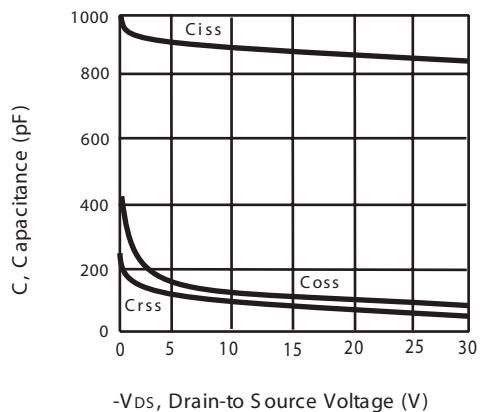


Figure 9. Capacitance

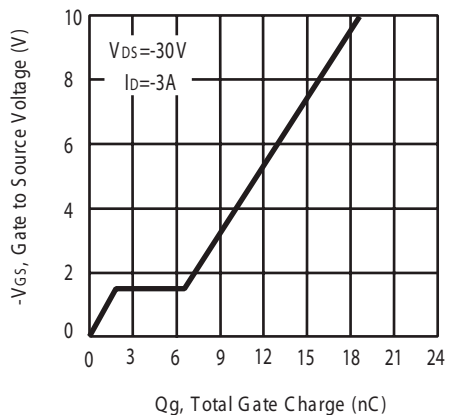


Figure 10. Gate Charge

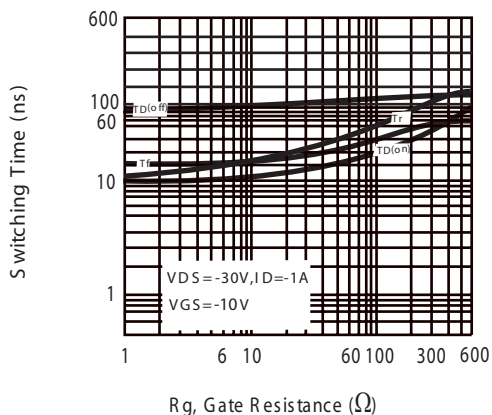


Figure 11. switching characteristics

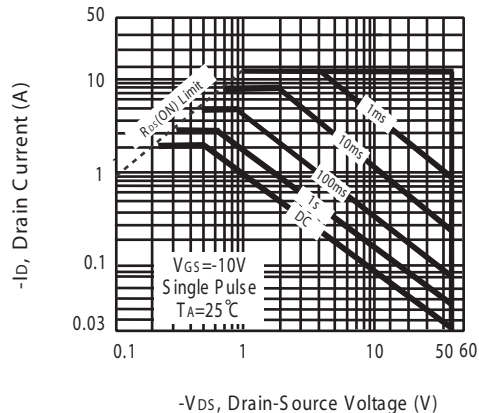


Figure 12. Maximum Safe Operating Area

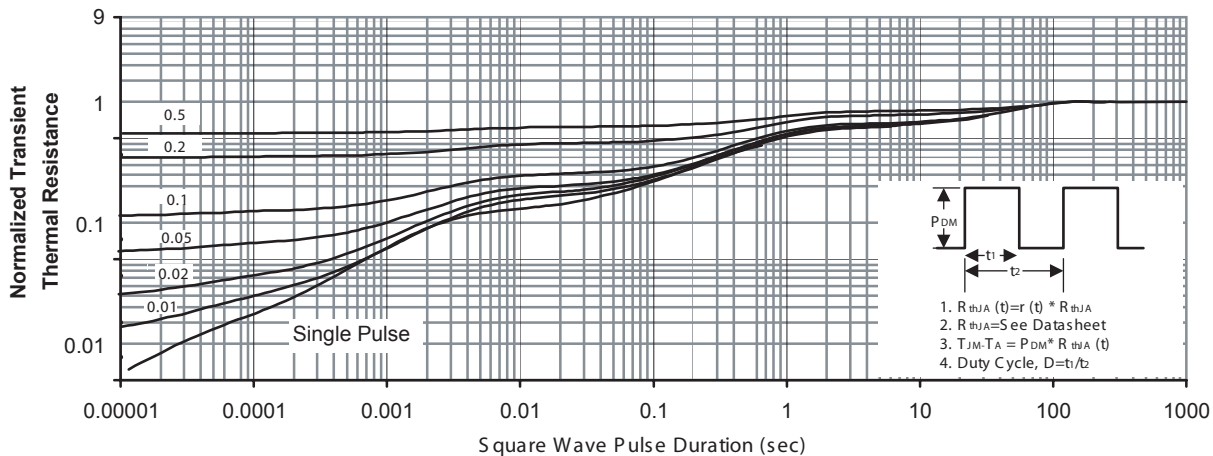
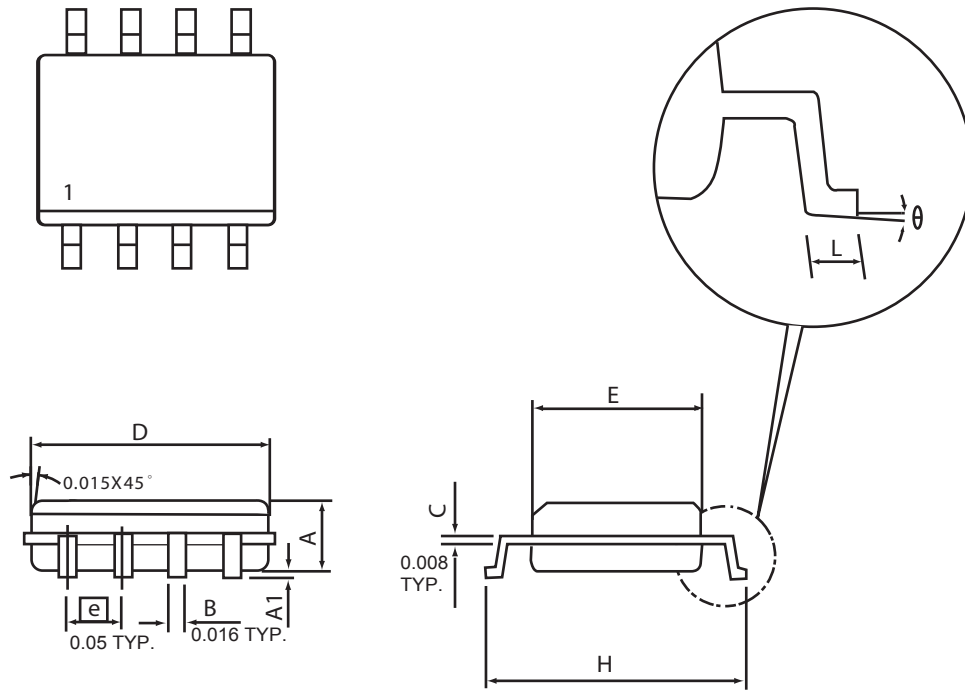


Figure 13. Normalized Thermal Transient Impedance Curve

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PACKAGE OUTLINE DIMENSIONS

SO-8

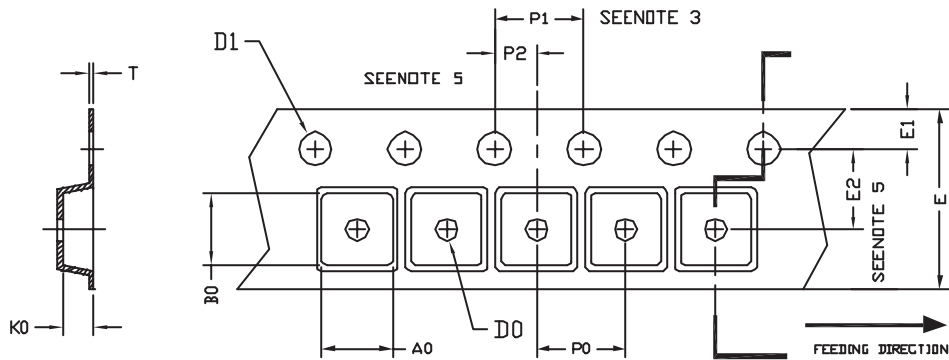


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
θ	0°	8°	0°	8°

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SO-8 Tape and Reel Data

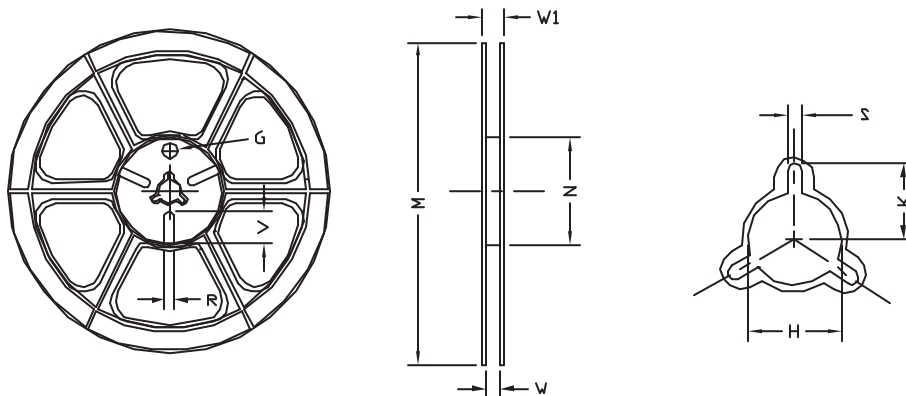
SO-8 Carrier Tape



unit:mm

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

SO-8 Reel



UNIT:mm

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