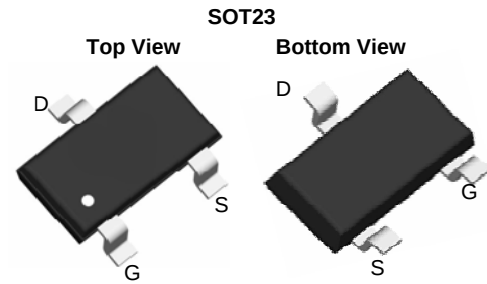


Product Summary

V_{DS}	-18V
I_D (at $V_{GS} = -4.5V$)	-7.0A
$R_{DS(ON)}$ (at $V_{GS} = -4.5V$)	<i>TYP.</i> = 26m Ω
$R_{DS(ON)}$ (at $V_{GS} = -2.5V$)	<i>TYP.</i> = 31m Ω

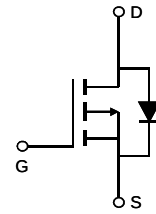


Features

- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Halogen-free; RoHS-compliant
- Pb-free plating

Applications

- Load Switch
- PWM Application
- Power Management



Absolute Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-to-Source Voltage	-18	V
V_{GS}	Gate-to-Source Voltage	± 10	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	A
		$T_A = 100^\circ C$	
I_{DM}	Pulsed Drain Current ⁽¹⁾	Refer to Fig.4	A
P_D	Power Dissipation	$T_A = 25^\circ C$	W
		$T_A = 100^\circ C$	
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Max	Unit
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ⁽³⁾	150	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ⁽⁴⁾	106	

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	I _D = -250μA, V _{GS} = 0V	-16	-18	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -12V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±10V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.3	-0.7	-1.5	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽⁵⁾	V _{GS} = -4.5V, I _D = -4.1A	-	26	35	mΩ
		V _{GS} = -2.5V, I _D = -3A	-	31	42	mΩ
Dynamic Characteristics						
R _g	Gate Resistance	f = 1MHz	-	11	-	Ω
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = -6V, f = 1MHz	-	656	-	pF
C _{oss}	Output Capacitance		-	91	-	pF
C _{rss}	Reverse Transfer Capacitance		-	77	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to -4.5V V _{DS} = -6V, I _D = -2A	-	10	-	nC
Q _{gs}	Gate Source Charge		-	2	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	1	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = -10V, V _{DD} = -6V I _D = -2.0A, R _{GEN} = 2.7Ω	-	5	-	ns
t _r	Turn-On Rise Time		-	12	-	ns
t _{d(off)}	Turn-Off DelayTime		-	50	-	ns
t _f	Turn-Off Fall Time		-	23	-	ns
Body Diode Characteristics						
I _S	Maximum Continuous Body Diode Forward Current		-	-	-7.0	A
I _{SM}	Maximum Pulsed Body Diode Forward Current		-	-	-16	A
V _{SD}	Body Diode Forward Voltage	V _{GS} = 0V, I _S = -4.1A	-		1.2	V
trr	Body Diode Reverse Recovery Time	I _F = -2A, di/dt = 60A/us	-	9	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	1.3	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. $R_{\theta JA}$ is measured with the device mounted on a minimum recommended pad of 2oz copper FR4 PCB.
 3. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.
 4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Typical Performance Characteristics

Figure 1: Power De-rating

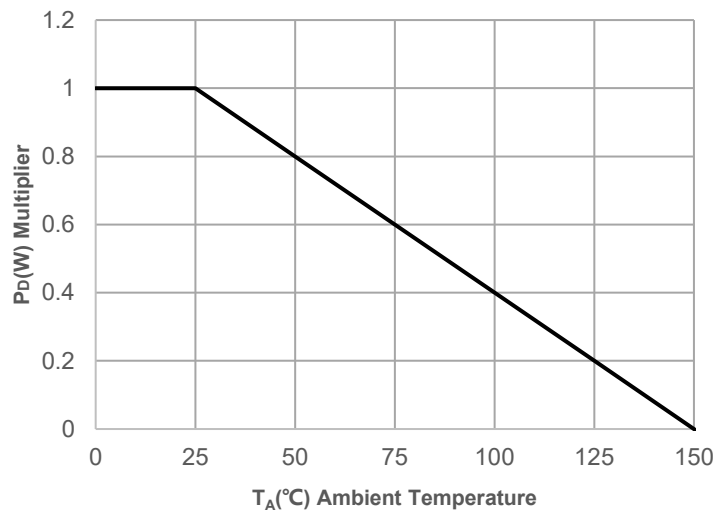


Figure 2: Current De-rating

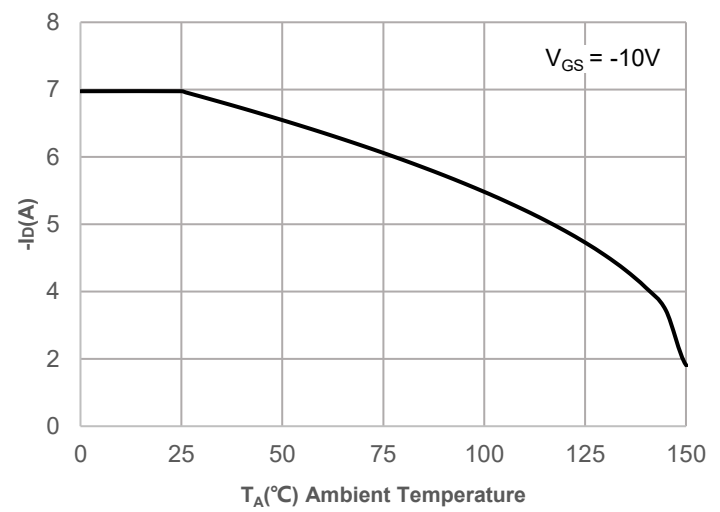


Figure 3: Normalized Maximum Transient Thermal Impedance

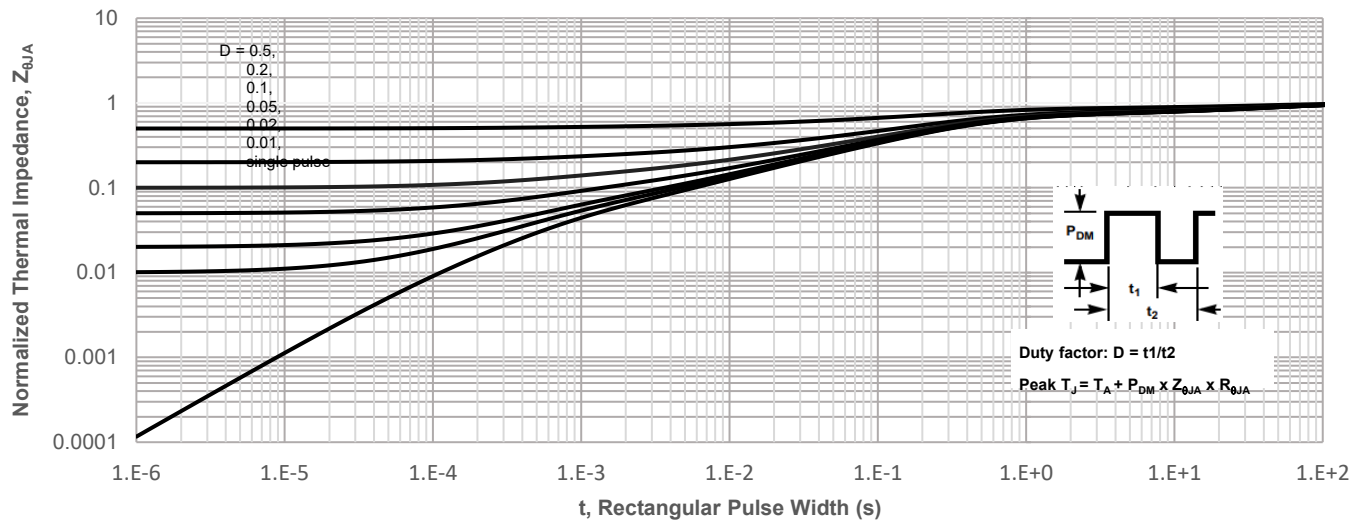
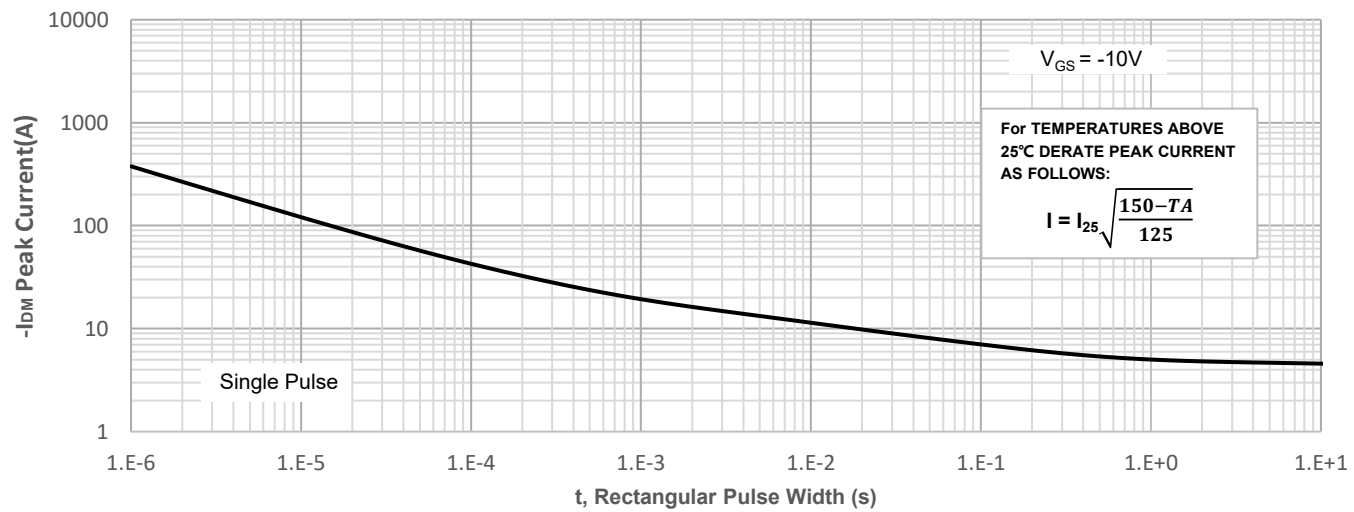


Figure 4: Peak Current Capacity



Typical Performance Characteristics

Figure 5: Output Characteristics

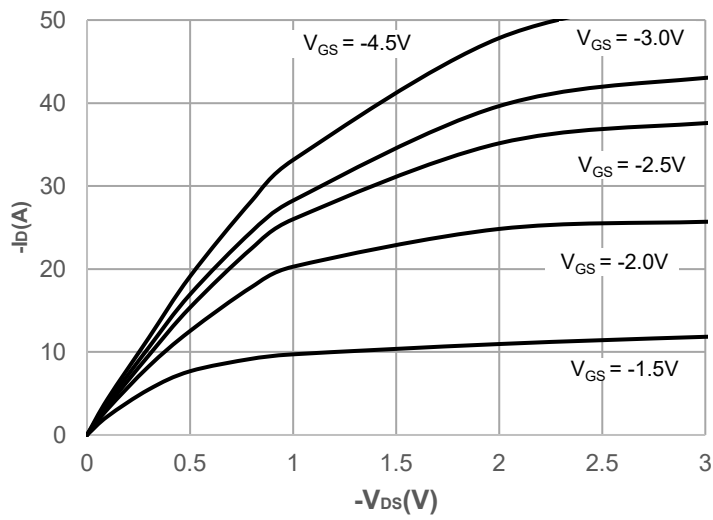


Figure 6: Typical Transfer Characteristics

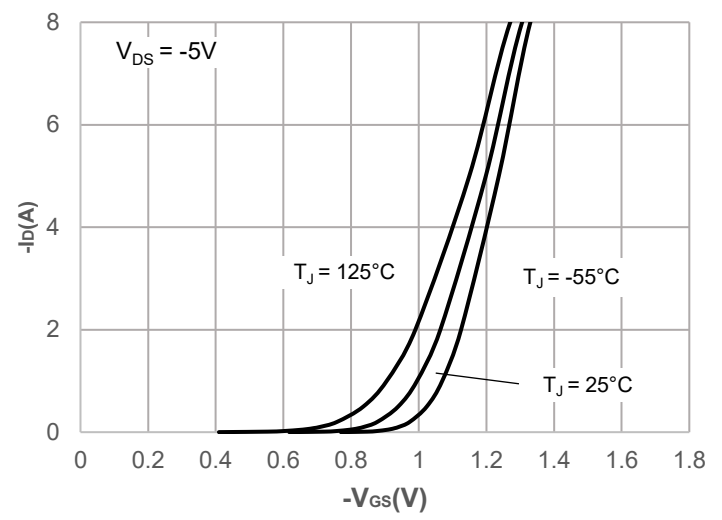


Figure 7: On-resistance vs. Drain Current

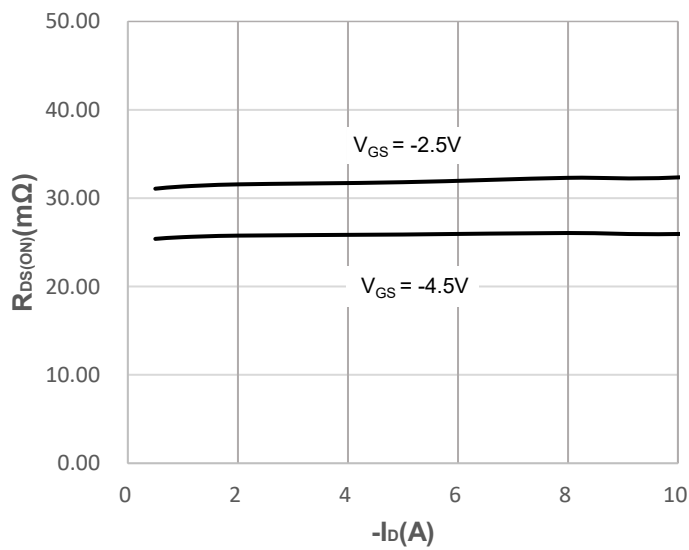


Figure 8: Body Diode Characteristics

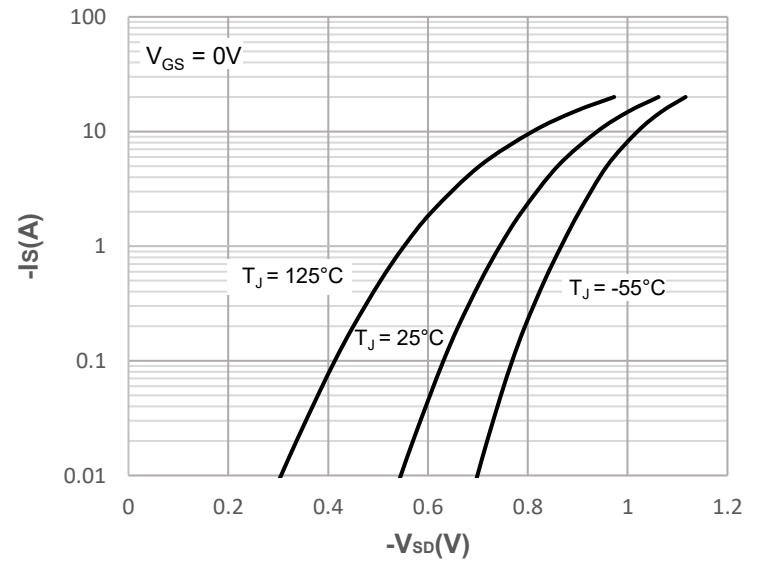


Figure 9: Gate Charge Characteristics

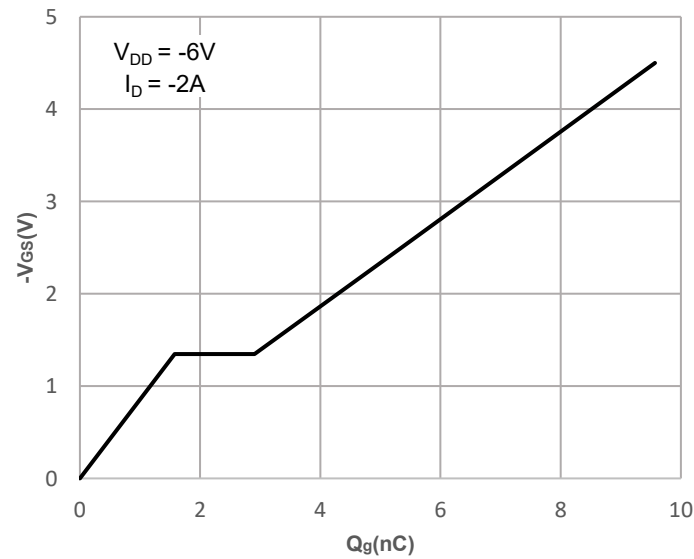
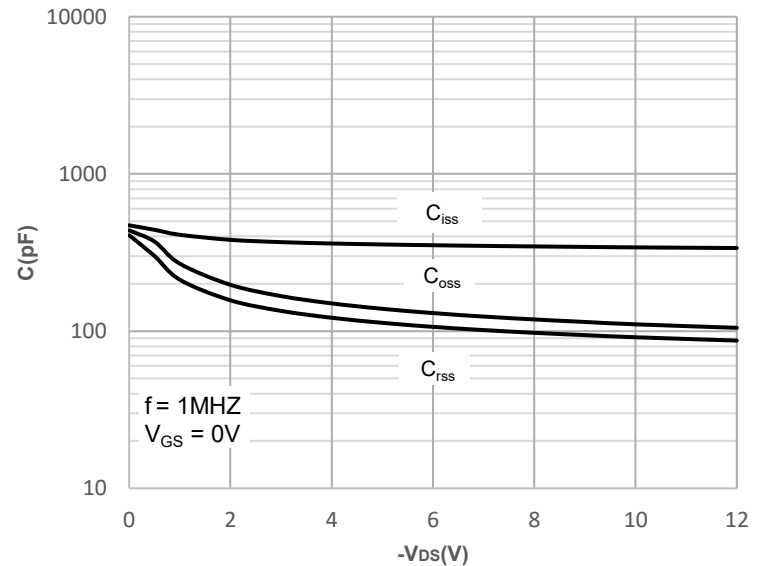


Figure 10: Capacitance Characteristics



Typical Performance Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

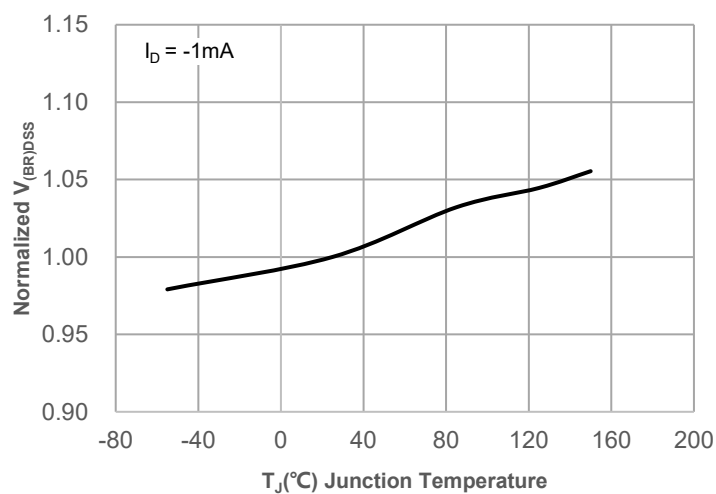


Figure 12: Normalized on Resistance vs. Junction Temperature

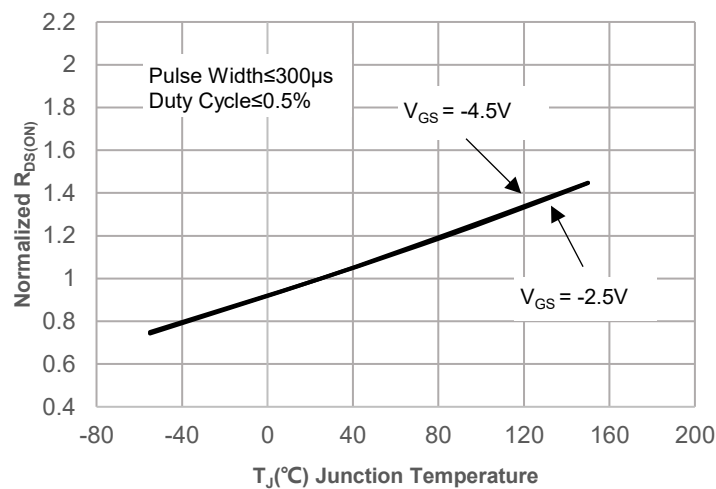


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

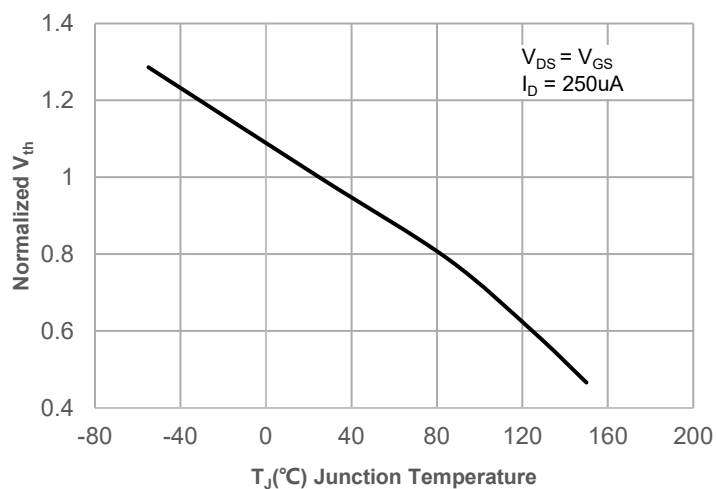


Figure 14: R_DS(ON) vs. V_GS

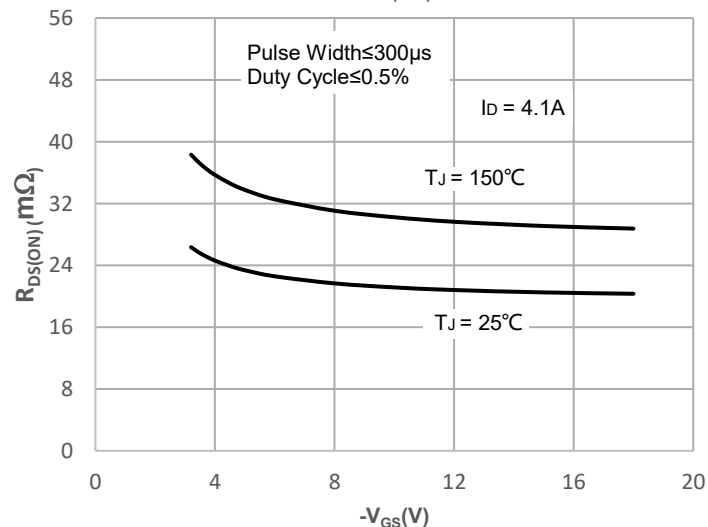
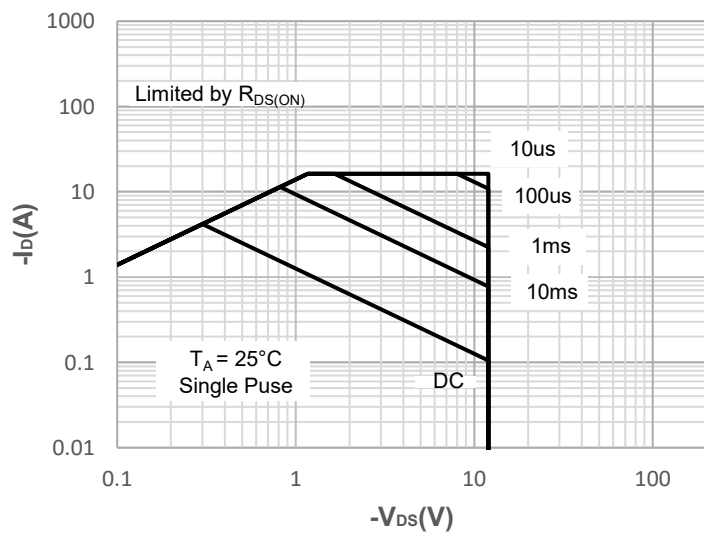


Figure 15: Maximum Safe Operating Area



Test Circuit

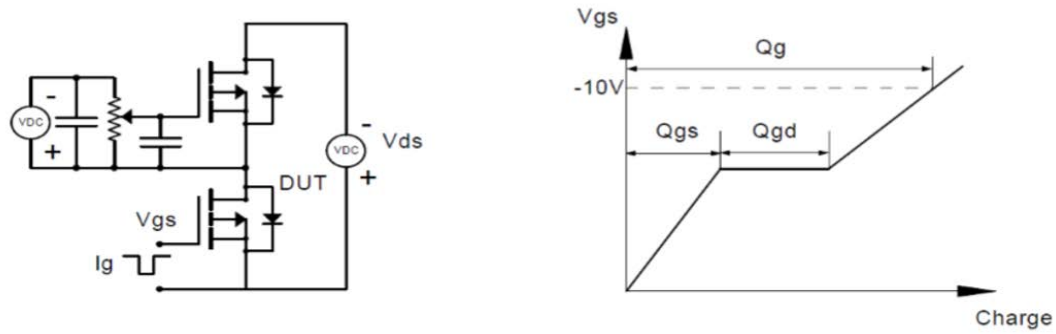


Figure 1: Gate Charge Test Circuit & Waveform

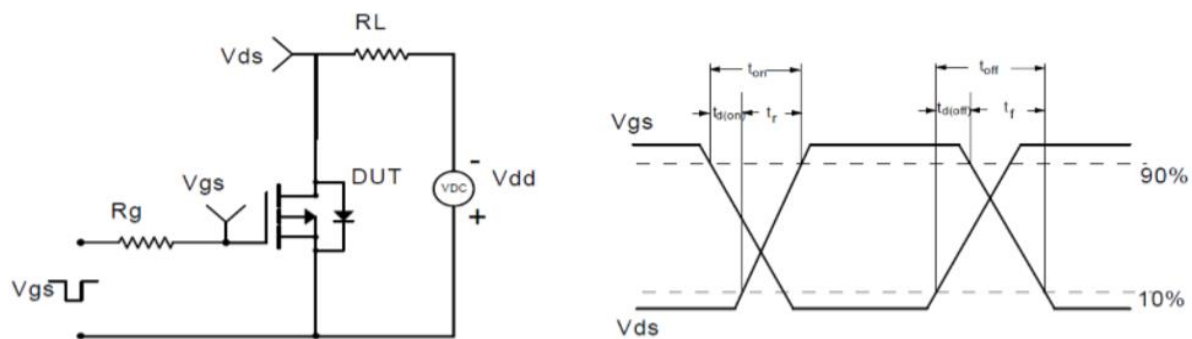


Figure 2: Resistive Switching Test Circuit & Waveform

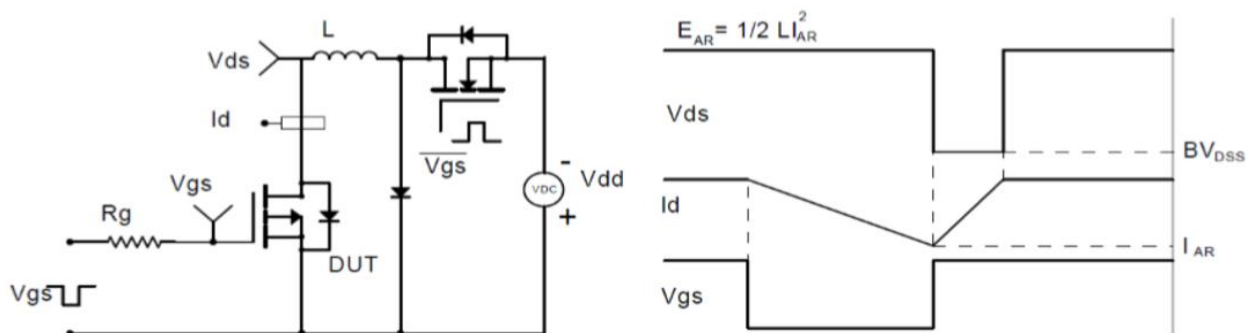


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

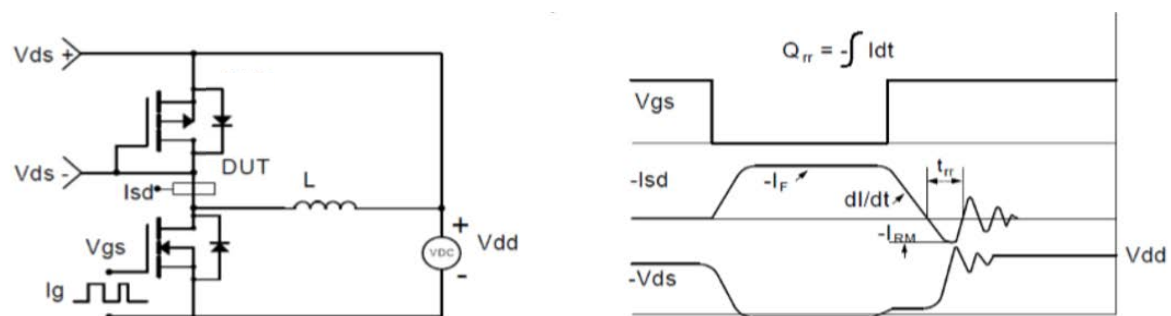
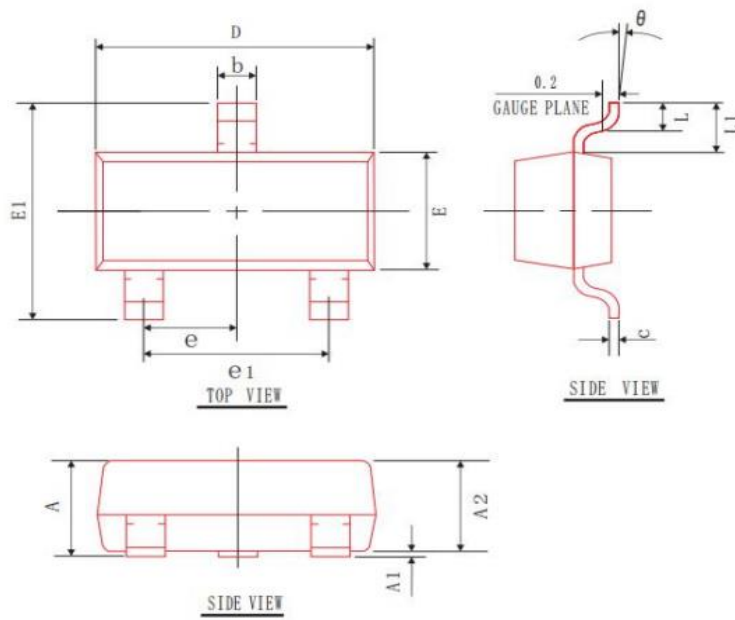


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(SOT-23)



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	0.90	1.05	1.20
A1	0.00	0.05	0.10
A2	0.90	1.00	1.10
b	0.30	0.40	0.50
c	0.08	0.10	0.15
D	2.80	2.90	3.00
E	1.20	1.30	1.40
E1	2.30	2.40	2.50
L	0.30	0.40	0.50
θ	0°	5°	10°
L1	0.55 REF		
e	0.95 BSC		
e1	1.90 REF		