

P-Channel Enhancement Mode MOSFET

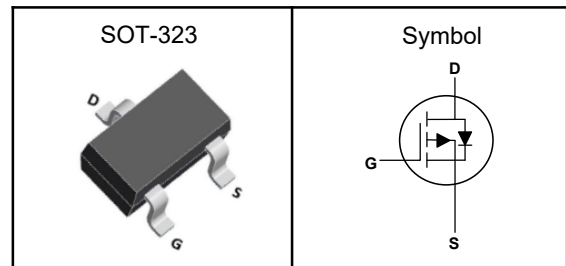
Features

- Low $R_{ds(on)}$ for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description



V_{DSS}	-20	V
$R_{DS(ON)-Typ}$	85	m Ω
I_D	-1.6	A

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	-20	V
V_{GSS}	Gate-Source Voltage	± 8	V
T_J	Maximum Junction Temperature	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$I_{DM}^{①}$	Pulse Drain Current Tested	-10	A
I_D	Continuous Drain Current	-1.6	A
P_D	Maximum Power Dissipation	340	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	367	$^\circ\text{C/W}$

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C .

Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.

**P-Channel Enhancement Mode MOSFET****Electrical Characteristics** ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

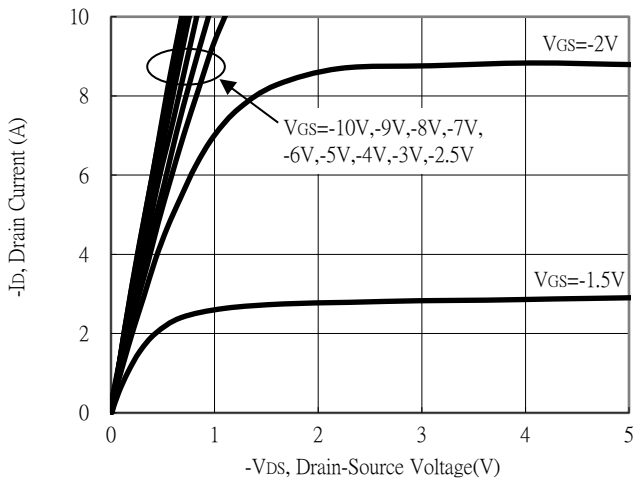
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-16V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.45	---	-1.2	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 8V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-4.5V, I_D=-1.6A$	---	85	120	$m\Omega$
		$V_{GS}=-2.5V, I_D=-1A$	---	115	165	$m\Omega$
gfs	Forward Transconductance	$V_{DS}=-5V, I_D=-3A$	---	---	---	S
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-10V,$ Freq.=1MHz	---	600	---	pF
C_{oss}	Output Capacitance		---	60	---	
C_{rss}	Reverse Transfer Capacitance		---	52	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-10V, V_{GS}=-4.5V,$ $R_G=3.3\Omega$	---	4	---	nS
T_r	Turn-on Rise Time		---	50	---	
$T_{d(off)}$	Turn-off Delay Time		---	5.2	---	
T_f	Turn-off Fall Time		---	23	---	
Q_g	Total Gate Charge	$V_{DS}=-10V, V_{GS}=-4.5V,$ $I_D=-1.6A$	---	8	---	nC
Q_{gs}	Gate-Source Charge		---	1	---	
Q_{gd}	Gate-Drain Charge		---	1.7	---	
Source-Drain Characteristics						
V_{SD} ^④	Diode Forward Voltage	$V_{GS}=0V, I_F=-1.6A, T_J=25^{\circ}\text{C}$	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=-1.6A,$ $di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	6	---	nS
Q_{rr}	Reverse Recovery Charge		---	1.7	---	nC

Note ④: Pulse test (pulse width 300us, duty cycle 2%).

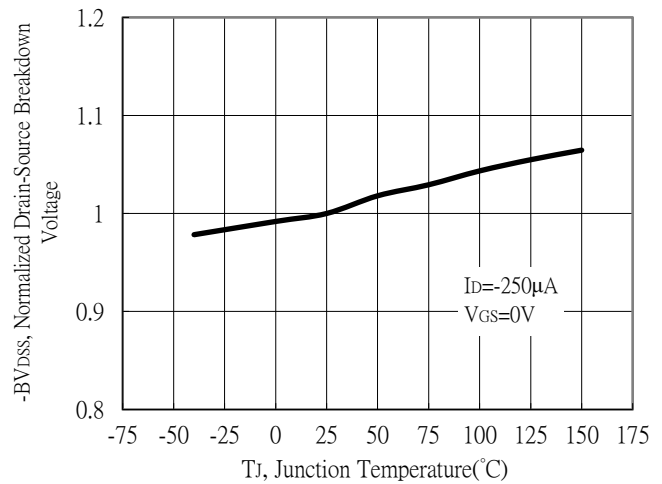
Note ⑤: Guaranteed by design, not subject to production testing.

P-Channel Enhancement Mode MOSFET
Typical Characteristics

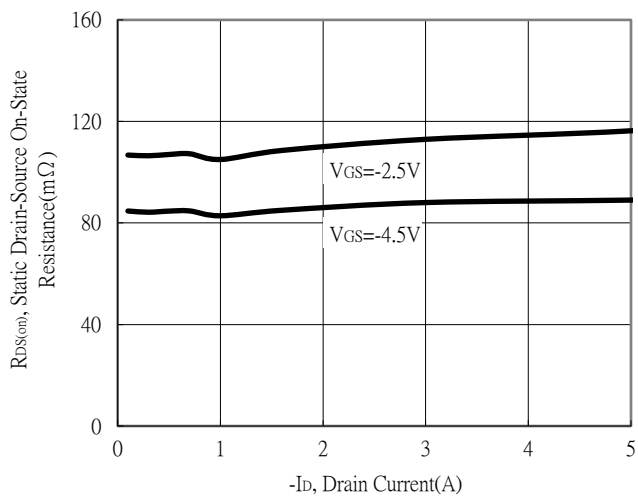
Typical Output Characteristics



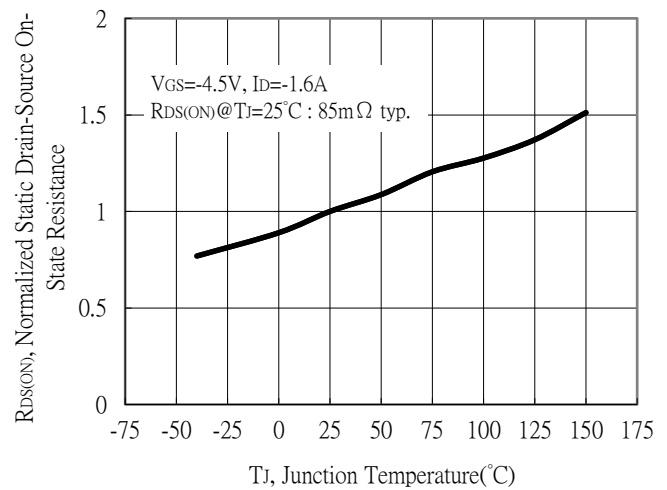
Breakdown Voltage vs Ambient Temperature



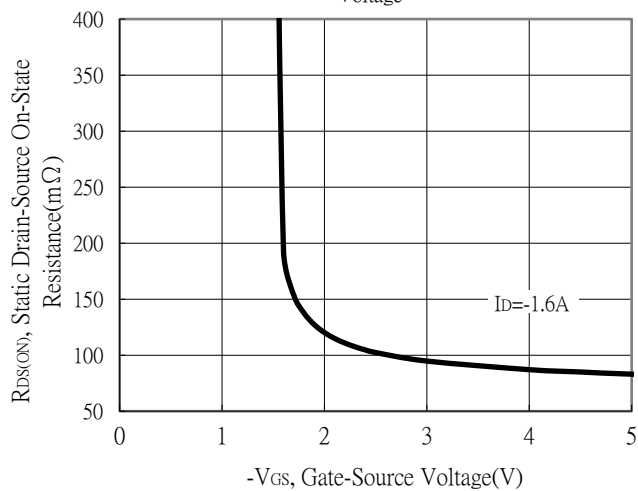
Static Drain-Source On-State resistance vs Drain Current



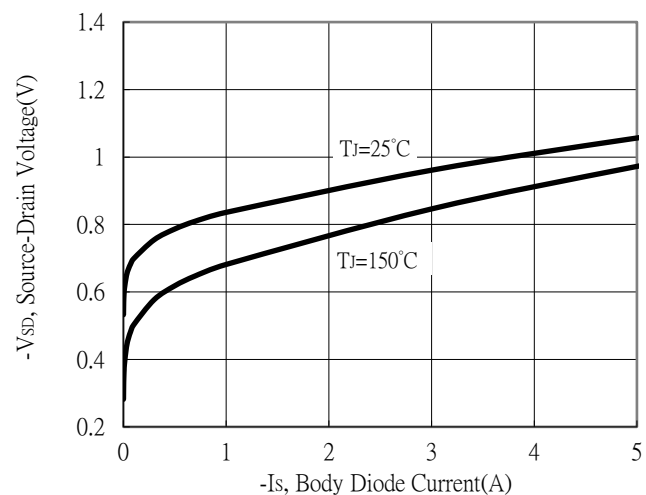
Drain-Source On-State Resistance vs Junction Temperature



Static Drain-Source On-State Resistance vs Gate-Source Voltage

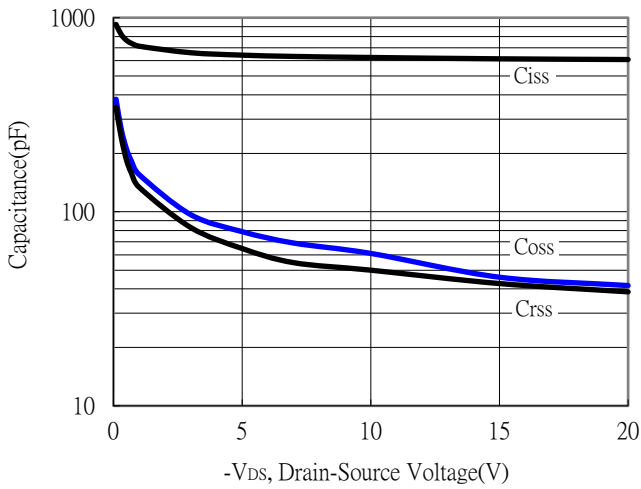


Body Diode Current vs Source-Drain Voltage

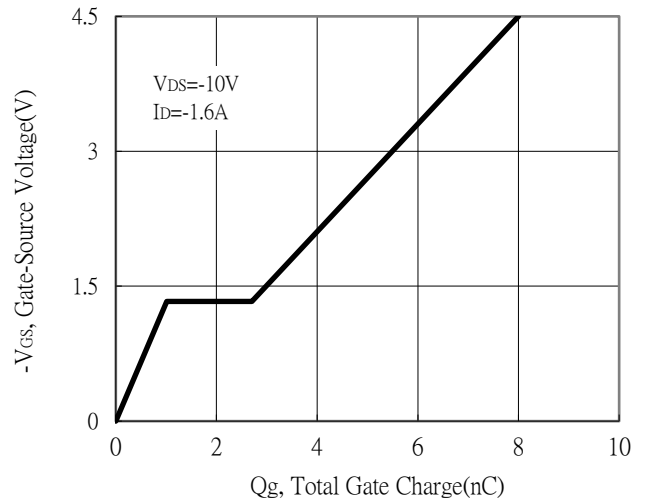


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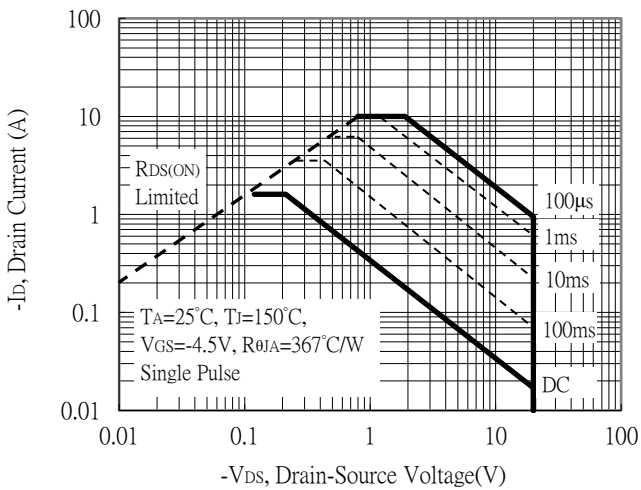
Capacitance vs Drain-to-Source Voltage



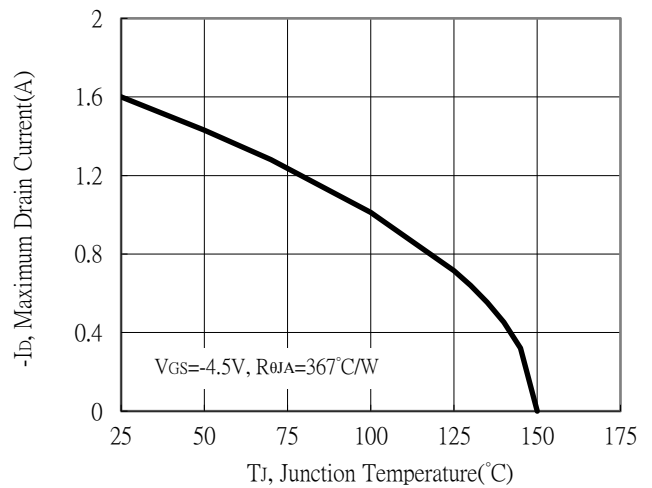
Gate Charge Characteristics



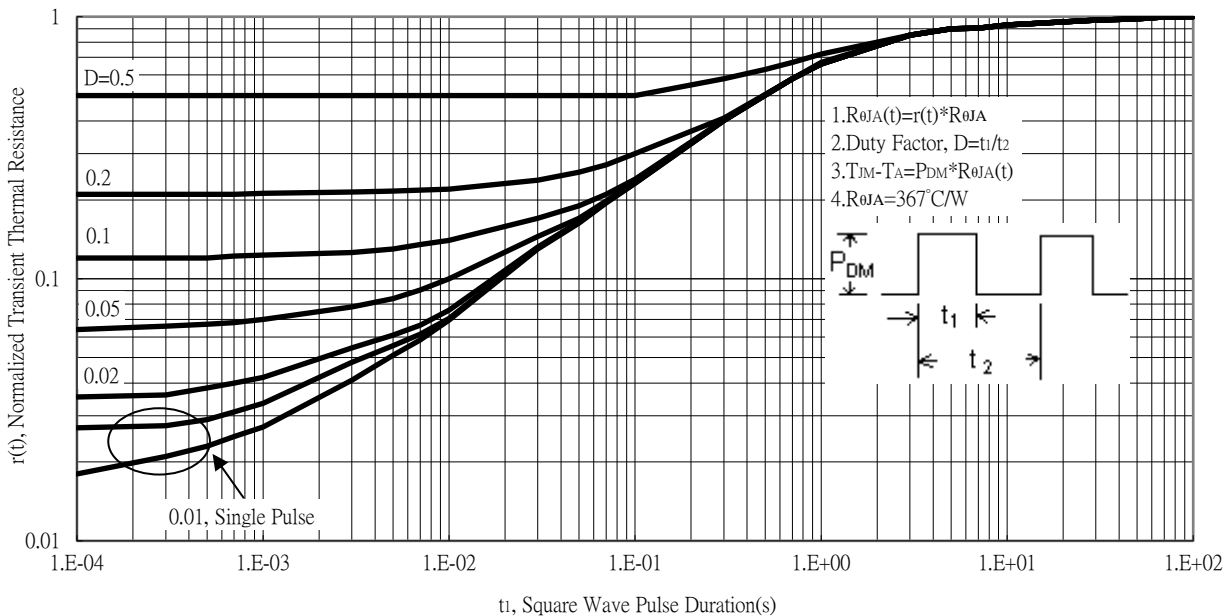
Maximum Safe Operating Area

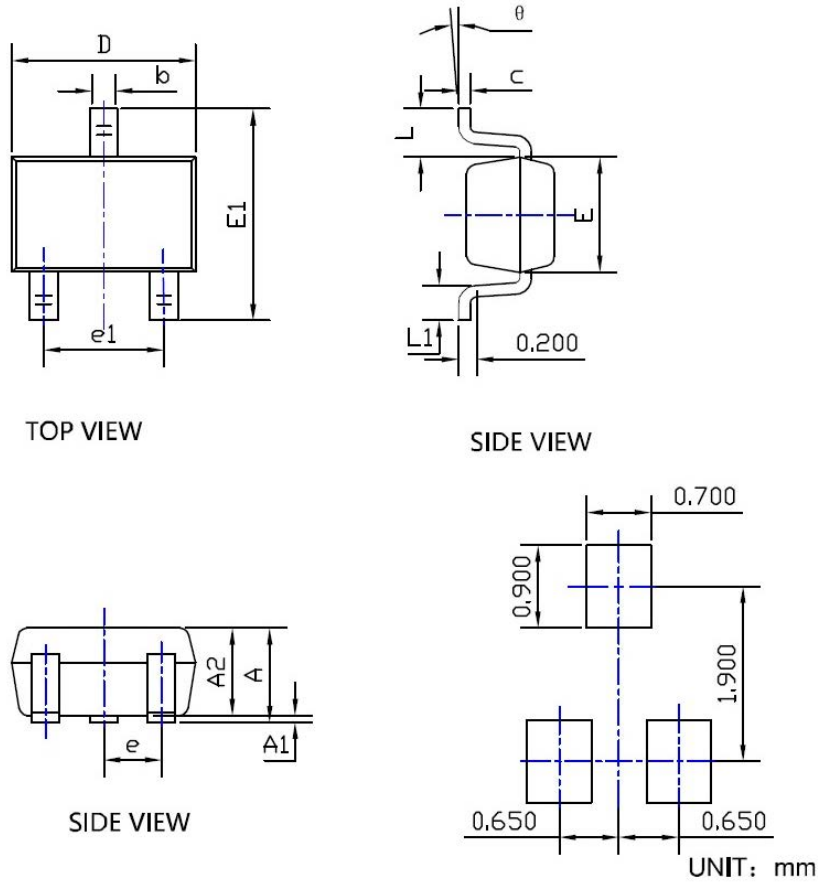


Maximum Drain Current vs Junction Temperature



Transient Thermal Response Curves



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SOT323 Package Outline Dimensions


Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.00	1.10	E₁	2.15	2.30	2.45
A₁	--	--	0.10	e	--	0.65	--
A₂	0.90	0.95	1.00	e₁	1.20	1.30	1.40
b	0.15	0.30	0.40	L	--	0.525	--
c	0.10	0.17	0.25	L₁	0.26	0.36	0.46
D	1.80	2.00	2.20	θ	0°		8°
E	1.15	1.25	1.35				