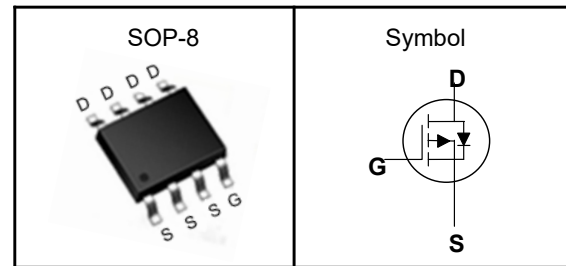


**P-Channel Enhancement Mode Power MOSFET**
**Features**

- Fast switching speed
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested

**Applications**

- Motor drivers
- DC - DC Converter

**Pin Description**


$V_{DSS}$	-40	V
$R_{DS(ON)-Typ}$	16	m $\Omega$
$I_D$	-8	A

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

Symbol	Parameter	N-Channel	Unit
$V_{DSS}$	Drain-Source Voltage	-40	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	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	-40	A
$I_D$	Continuous Drain Current	-8	A
$P_D$	Maximum Power Dissipation	2.5	W

**Thermal Characteristics**

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	50	$^\circ\text{C/W}$



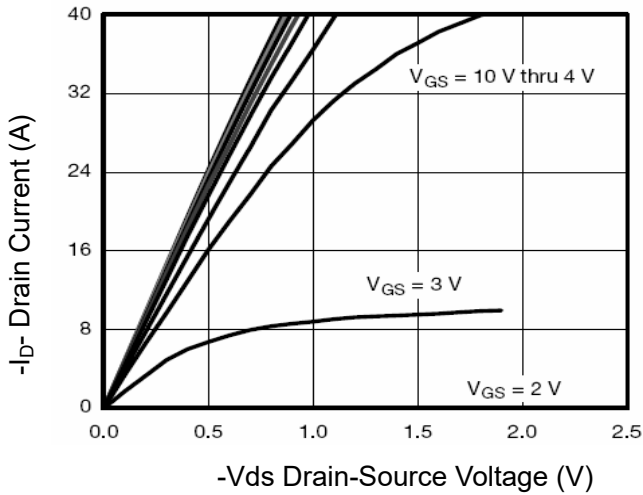
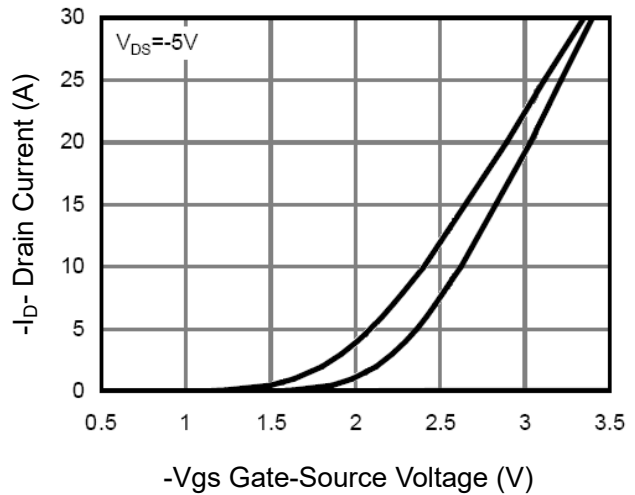
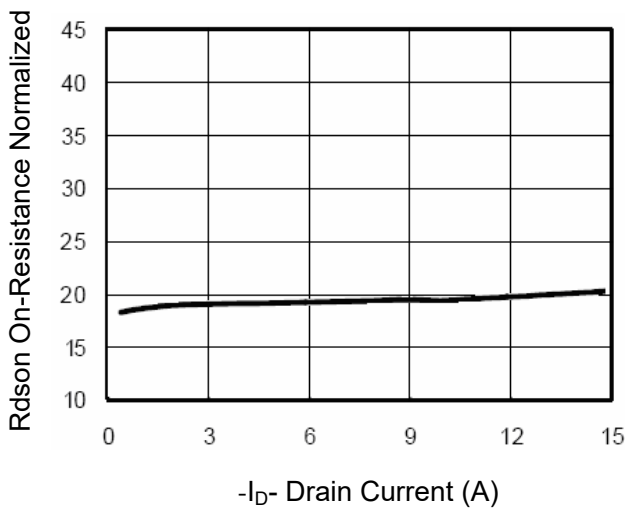
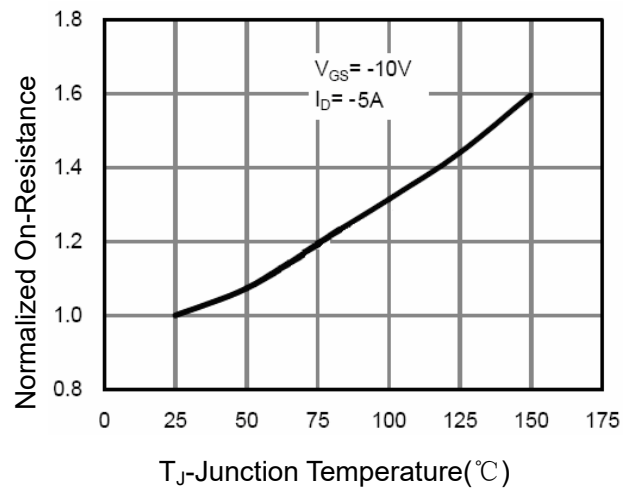
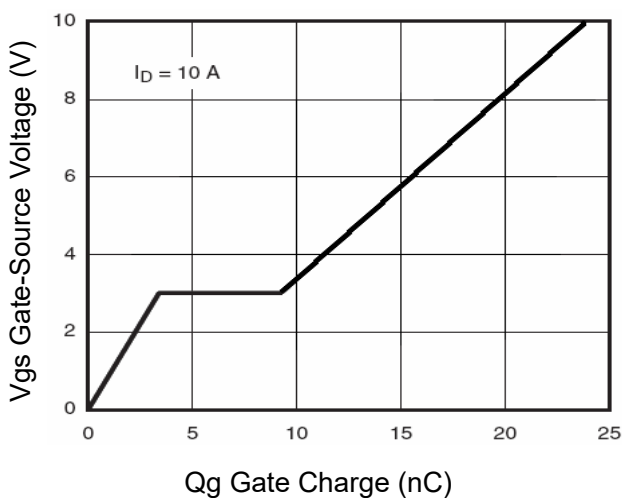
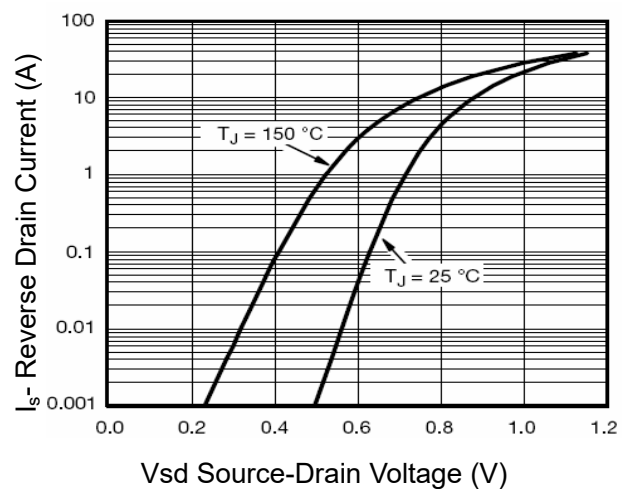
**P-Channel Enhancement Mode Power MOSFET**

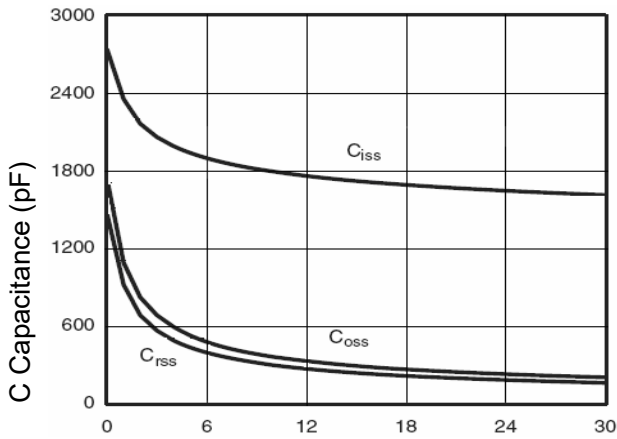
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$ , Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-40	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-40V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.1	-1.7	-2.5	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_D=-5A$	---	16	25	$m\Omega$
		$V_{GS}=-4.5V, I_D=-5A$	---	21	30	$m\Omega$
<b>Dynamic Characteristics<sup>⑤</sup></b>						
gfs	Forward Transconductance	$V_{DS}=-5V, I_D=-5A$	20	---	---	S
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=-20V, \text{Freq.}=1\text{MHz}$	---	1750	---	pF
$C_{oss}$	Output Capacitance		---	215	---	
$C_{rss}$	Reverse Transfer Capacitance		---	180	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{GS}=-10V, V_{DD}=-20V, I_D=-5A, R_G=3\Omega$	---	9	---	nS
$T_r$	Turn-on Rise Time		---	8	---	
$T_{d(off)}$	Turn-off Delay Time		---	28	---	
$T_f$	Turn-off Fall Time		---	10	---	
$Q_g$	Total Gate Charge	$V_{GS}=-10V, V_{DS}=-20V, I_D=-5A$	---	24	---	nC
$Q_{gs}$	Gate-Source Charge		---	3.5	---	
$Q_{gd}$	Gate-Drain Charge		---	6	---	
<b>Source-Drain Characteristics</b>						
$V_{SD}^{④}$	Diode Forward Voltage	$I_S=-6A, V_{GS}=0V$	---	---	-1.2	V

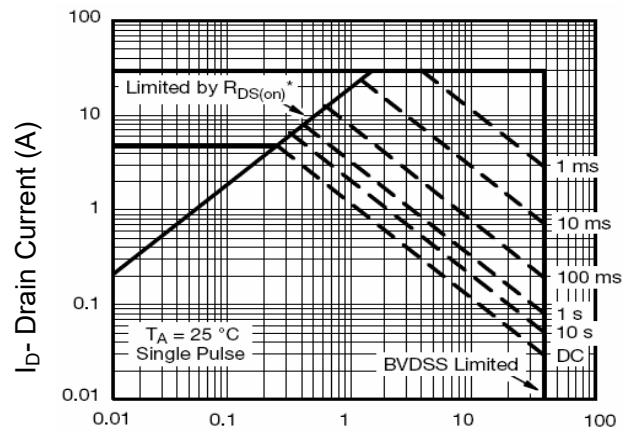
Note ④: Pulse test (pulse width $\leq 300\mu s$ , duty cycle $\leq 2\%$ ).

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

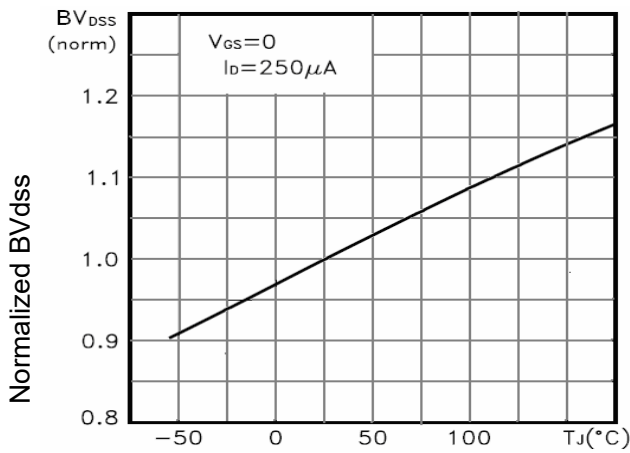
**P-Channel Enhancement Mode Power MOSFET**
**Typical Characteristics**

**Figure 1 Output Characteristics**

**Figure 2 Transfer Characteristics**

**Figure 3 Rdson- Drain Current**

**Figure 4 Rdson-Junction Temperature**

**Figure 5 Gate Charge**

**Figure 6 Source- Drain Diode Forward**

**P-Channel Enhancement Mode Power MOSFET**


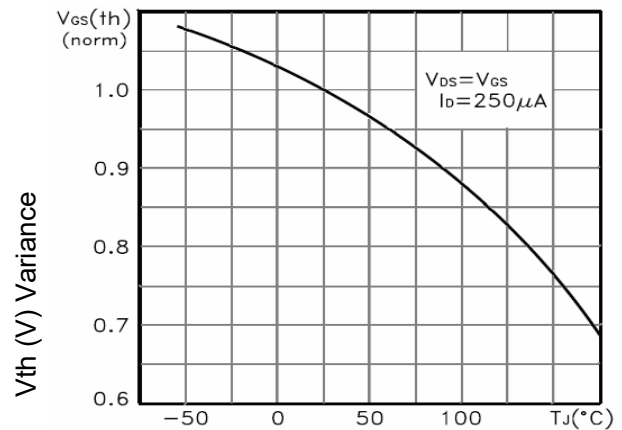
Vds Drain-Source Voltage (V)  
**Figure 7 Capacitance vs Vds**



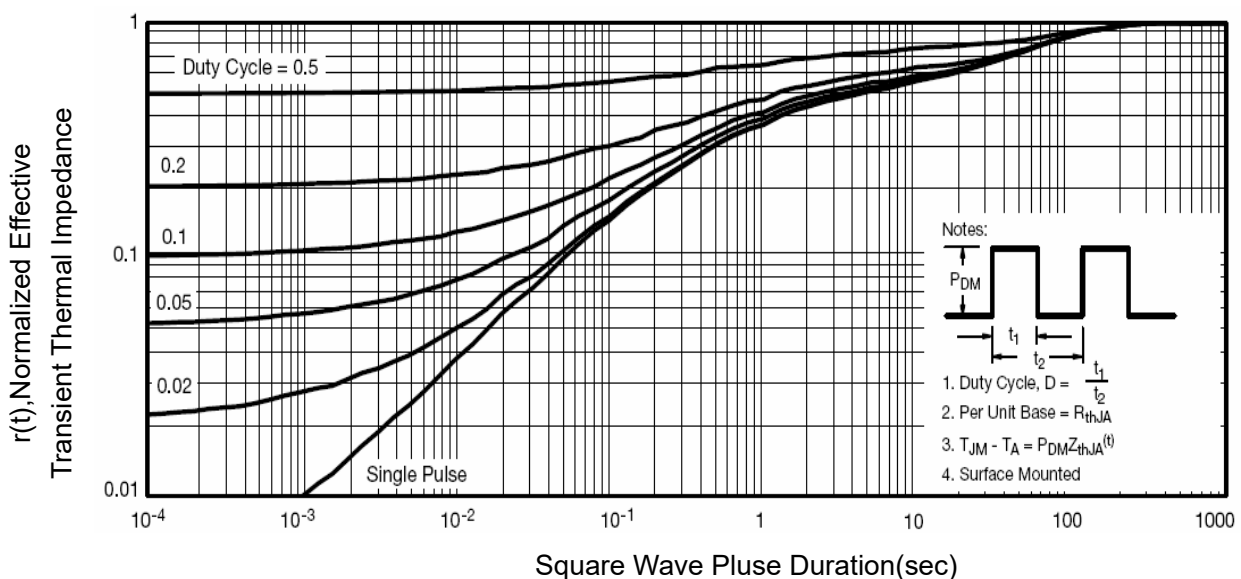
Vds Drain-Source Voltage (V)  
**Figure 8 Safe Operation Area**



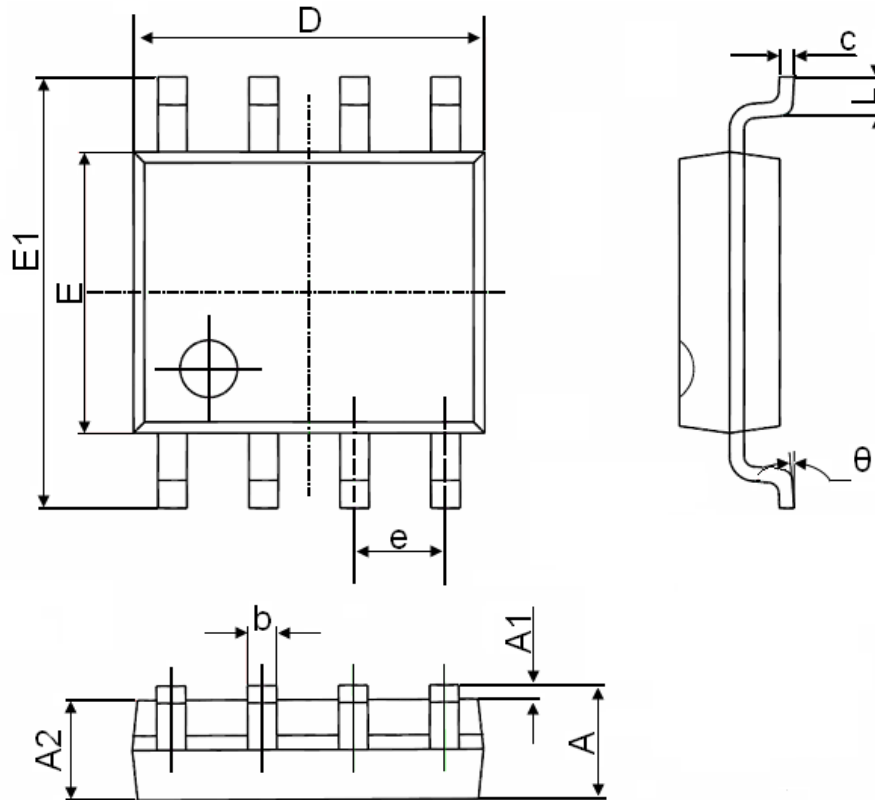
T<sub>J</sub>-Junction Temperature (°C)  
**Figure 9 BV<sub>DSS</sub> vs Junction Temperature**



T<sub>J</sub>-Junction Temperature(°C)  
**Figure 10 V<sub>GS(th)</sub> vs Junction Temperature**



**Figure 11 Normalized Maximum Transient Thermal Impedance**

**P-Channel Enhancement Mode Power MOSFET**
**SOP-8 Package Outline Data**


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.330	0.510
c	0.170	0.250
D	4.700	5.100
E	3.800	4.000
E1	5.800	6.200
e	1.270(B C)	
L	0.400	1.270
$\theta$	0°	8°